

EFFECTS OF TOXIC STIMULI COMBINATIONS ON DETERMINATION OF EXPOSURE LIMITS

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ABSTRACT

This monograph addresses the effects of toxic stimuli combinations on determination of safe Exposure Limits. It shows these combinations 1) typically lower the threshold constituent exposure levels associated with damage compared to 2) tests of combination constituents run in isolation. The monograph concludes there is no reason to believe today that **ANY** of the Exposure Limits on potentially toxic stimuli that have been set by **ANY** of the regulatory agencies are fully protective against serious adverse health effects.

While radiofrequency radiation (RFR) is used for illustrative purposes in a number of the examples presented, the conclusions are applicable to essentially all potential contributing factors to disease amenable to Exposure Limits. RFR combinations are the focal point in [Appendix 2](#), where their potential role in contributing to the national/global opioid epidemic is also discussed.

INTRODUCTION

Single Stressor Studies

Since the dawn of the Industrial Age, and especially over the past century, many thousands of technologies and their products have been introduced to our society. There has been continual concern about the safety of these products, as reflected in their potential adverse impacts on human health.

As a result, a number of regulatory agencies have been established for the purpose of ensuring these technology products are safe. The mechanisms used by these agencies to determine safety have been of two main types: laboratory experiments (mainly on animals) and epidemiology studies (mainly on humans).

By far, the dominant approach has been single stressor studies, mainly on animals: "Over the past 35 years, the vast majority of risk assessments conducted by EPA have concentrated narrowly on individual chemical agents, distinct sources or source categories, and single exposure pathways, environmental media, routes of exposure, and health endpoints" [1]; "Traditional chemical-specific risk assessment based on animal testing may be insufficient and the lack of toxicological studies on chemical mixtures remains a major regulatory challenge." [2]; "The current chemical risk assessment approach is typically based on the toxicity caused by a single chemical on a variety of organs without acknowledging additional exposures to other chemicals also affecting the same organ or system." [3].

Multiple Stressor Studies

However, many biomedical studies have shown that **combinations** of stressors can enhance the adverse effects of any one of their constituents acting in isolation, with only a relatively few combinations decreasing the adverse effects of any constituent acting in isolation. Additionally, combinations of stimuli have *conceptually* similar effects on 1) treatments for diseases and 2) contributing factors to diseases. For treatments, usually, stimuli combinations allow less of each component (in a combination of stimuli) to be used for effectiveness compared to the levels obtained when examining the effectiveness of each component in isolation. For contributing factors, usually, stimuli combinations allow less of each component to cause damage compared to the levels obtained when examining the effectiveness of each component in isolation (single stressor experiment, for assessing damage of the stimulus).

Thus, when setting safety/Exposure Limits for **contributing factors** in particular, safety/Exposure Limits for a given combination component based on results from experiments in isolation (single stressor)

could be substantially higher than the levels at which that component could cause damage when used in combination with the other stimuli components.

Types of Combination Effects

These types of combination effects include:

Additive effects (the combined effect of two or more agents acting in the same general direction approximates the sum of the effects of the agents administered separately, subject to the maximum possible effects in biological systems);

Synergistic effects (the combined effect of two or more agents is significantly greater than the sum of the effects of each agent administered alone, subject to the maximum possible effects in biological systems);

Potentiative effects (the increased effect of an agent by concurrent action of another agent that does not have a stand-alone effect); and

Antagonistic effects (the combined effects of two agents acting in different/ opposite directions are smaller than the effect of any one of them in standalone mode) [4].

Examples of Combination Effects

[Appendix 1](#) shows some of these multi-stressor combinations, and the resultant enhancement of adverse effects. Items 1 - 3 are the most interesting, in my estimation. In these cases, each of the items tested in isolation was essentially benign (in the parameter range selected), yet in combination contributed to harmful effects. Depending on where each substance in isolation starts to show damaging effects, ***the difference in setting Exposure Limits based on experiments in isolation (single stressor experiments) and based on the actual experiments in combination could be substantial.***

Items 4 - 7 show modest damage from each component of the combination in isolation (in the parameter range selected), but the enhancement afforded by the combination increases the damage substantially.

Item 8 is the same type as items 4-7, but reflective of an interesting application.

Items 9 - 10 reflect an interesting combination of stimuli: sunlight and a potentially toxic stimulus. Sunlight, in appropriate amounts, can be viewed as foundational to good human health. It is probably the best source of Vitamin D through its stimulative effect on the skin. Yet, in recent years, sunlight has developed a reputation as potentially harmful, even in less than overly strong doses.

These two examples show that the skin can become overly sensitive to UV radiation through ingestion of, or exposure to, substances that can act as photosynthesizers. This combination of sunlight and one or more photosynthesizers can increase the risk of certain types of skin cancer.

Some of the substances that directly increase this photosynthesizer effect can be identified from simple laboratory experiments. What combinations of other substances that, by themselves, do not act as photosynthesizers, will produce an enhanced effect resulting in increased photosynthesizing? Or, what combinations of substances that, by themselves, have been shown to be weak photosynthesizers, will result in a strong photosynthesizing effect due to the interactions of the constituents?

Sunlight, a human health requirement, may not be the main culprit here, at least in many cases not involving overexposure or predisposition. The main culprit may be the combinations of other potentially toxic stimuli (to which we are exposed) that result in a strong photosynthesizing effect.

Item 11 addresses multi-component mixtures. The two takeaways are 1) the enhanced effects predominated at lower effect levels, and 2) the relevance of enhanced effects increased with the complexity of the mixture. So, the greater the number of components, the more important the enhancements, and the lower the levels of some or all of the components required to cause damage.

Therefore, even the effects of combinations of two contributing factors typically found in laboratory experiments may provide insufficiently protective safety/Exposure Limits, compared to the effects of larger combinations characteristic of the real world.

The [Bibliography section \(B\)](#) on Combined Toxicity and Enhanced Adverse Effects presents a much larger sample of combinations of stressors and their resultant impacts. But, even this Bibliography is a small fraction of multiple stressor combinations in the biomedical literature.

I have published two documents focused wholly on effects of non-ionizing radiation combined with other items, including both positive and negative effects of the combination [4-5]. The other items included (but were not limited to) chemical and physical. For radiofrequency radiation (RFR) in particular, the effects of RFR combined with one other stressor in lab tests can result in damage at lower RFR exposures than RFR exposures shown to cause serious damage when measured in isolation. The effects of RFR combined with myriad other stressors, as reflected in epidemiology studies, can result in serious damage at RFR exposures ***orders of magnitude less*** than RFR exposures shown to cause serious damage when measured in isolation.

As a specific example, consider the case of cell towers. The epidemiological studies on cell towers and cell phones reflect the real-world multi-stressor combinations to which people are exposed, although many of the constituent contributing factors to the combinations remain unknown. For higher accuracy in these types of studies, the test subjects would have to be instrumented to measure (at a minimum) the major and semi-major contributing factors 24/7 over many years. This would include the RFR contributing factor, but also potential contributing factors from the chemical, physical, biological, and psychological worlds.

The cell tower results, imperfect as they are, show increasing ***cancer*** incidence starting in the ***low thousands of microwatts/square meter*** [6-8]. And, most of the cell tower studies don't report measurements of actual indoor exposures, so ***the actual power fluxes experienced by the residents could be an order of magnitude less than the numbers above for many of the residents in the so-called danger zone within a few hundred meters of the cell tower.*** Contrast this with the recent large-scale studies conducted by the National Toxicology Program (NTP) [9] and Ramazzini Institute [10], where RFR was applied in 'isolation', in single stressor tests. These studies showed statistically significant increases in ***cancer*** starting in the ***millions of microwatts/square meter.***

It should be emphasized the above numbers apply to ***cancer*** incidence. There is a wide spectrum of adverse health effects from RFR that surface at much lower power flux levels. The Bioinitiative Report [11] provides a good summary of these adverse health effects, and the associated power flux levels at which they emerge. A recent study [12] summarizes the types of damage from electromagnetic field exposures and the myriad biological mechanisms that might cause this damage. Since many of these experiments involved single stressors, the real-world emergence of these adverse health effects can be expected to occur at much lower power flux levels when RFR is experienced as part of multi-stressor combinations.

ANALYSIS

Inadequacy of Existing Stressor Studies for Setting Exposure Limits

The reason few combinations (relative to single stressors) are selected for study derives from combinatorics. Consider the number of possible combinations of two and three items. For n variables, and possible combinations of a subset of n consisting of r variables, the number of combinations is: $C(n,r) = n! / (r! * (n-r)!)$, where $!$ denotes the factorial function. For large n , and r small compared to n , $C(n,r) \sim n^r / r!$. For large n , C becomes a large number. How large? Consider the following, using RFR as an example.

It would be useful to identify comprehensively those substances that could combine with RFR to produce enhanced adverse health effects. There are many tens of thousands of items that could be potential candidates for study. Is there any way to narrow those down?

My book 'Pervasive Causes of Disease' [13] examined contributing factors to ~4,000 diseases, and identified factors that contributed to 1) any of these diseases and 2) a threshold number of diseases. There were about 8,000 causes identified for the ~4,000 diseases. On the order of 800 substances that contributed to at least a threshold number of the ~4,000 diseases were identified, and were labeled pervasive causes because of their widespread impact. The total number of causes identified for all diseases (~8,000) might be a good starting point for identifying additional potential RFR combinations. Why is this a reasonable assumption?

The various systems in the body are inter-related. The immune system, neural system, endocrine system, circulatory system, etc, are linked. There are research disciplines devoted to study of these linked systems (e.g., neuroimmunology, neuroimmunoendocrinology, etc). Most of the ~8,000 causes impact one or more of these inter-related systems. Many of the studies focus on the impact of the test substance on (typically) one system only. It would be reasonable to expect that a substance impacting one of the systems above would have some level of impact on the other systems above, with some impacts being more significant than others.

Thus, the ~8,000 potential causes would be candidates for evaluation as RFR partners. However, many of these ~8,000 potential contributing factors are relatively rare in the existing biomedical literature. Their rarity may be because 1) they are 'weak' contributing factors, 2) they have not yet been studied for many diseases, or 3) their adverse effects may have been suppressed from publication by the sponsor or journal.

First, let's examine two sub-sets of the 8,000 potential causes. Assume the top 1,000 contributing factors are reasonably important (essentially those deemed 'pervasive' in my book), and assume the top 100 contributing factors are quite important. How many experiments would be required to examine comprehensively their potential damage enhancements in concert with RFR?

1. 1000 contributing factors as possible RFR partners

If all possible combinations of the 1000 contributing factors were partnered with RFR, there would be 1000! [factorial] experiments required. The number is essentially infinite. We will instead examine combinations starting at the other end of the combinatorial spectrum.

For potential damage enhancements of RFR combined with *one* other contributing factor, 1000 experiments would be required to cover all 1000 contributing factors. And, each experiment would be more complex than an experiment for each component in isolation. For example, suppose four values were selected for each variable. In the simplest illustrative case, the isolated experiment would require four runs for each variable (eight runs total). In the combination experiment, sixteen runs total would be required.

For potential damage enhancements of RFR and *two* other contributing factors (a three component combination), ~500,000 experiments would be required (according to the approximate formula above). An online calculator gives the exact number as 499,500, so the approximation is quite reasonable.

For potential damage enhancements of RFR and *three* other contributing factors (a four component combination), 166,167,000 experiments would be required. Given the cost and time of e.g. the NTP experiment, the number of two, three, or four component experiments required to cover all 1000 possibilities is completely unrealistic.

2. 100 contributing factors as possible RFR partners

For potential damage enhancements of RFR combined with *one* other contributing factor, 100 experiments would be required to cover all 100 contributing factors. For potential damage enhancements of RFR and *two* other contributing factors (a three component combination), 4,950 experiments would be required. For potential damage enhancements of RFR and *three* other contributing factors (a four component combination), 161,700 experiments would be required. Even RFR and one other contributing factor require a large number of experiments, and the two and three other contributing factor scenarios are again completely unrealistic in terms of number of experiments and available resources required.

3. 10 contributing factors as possible RFR partners

We consider the additional case of combinations of ten contributing factors with RFR. For potential damage enhancements of RFR and *one* other contributing factor, 10 experiments would be required to cover all 10 contributing factors. For potential damage enhancements of RFR and *two* other contributing factors (a three component combination), 45 experiments would be required. For potential damage enhancements of RFR and *three* other contributing factors (a four component combination), 120 experiments would be required. While these numbers are still huge, based on the experience with the NTP study, they are not out of the realm of possibility.

DISCUSSION

The role of combinations in setting exposure limits

Again, we use RFR as the example, for illustrative purposes only. The arguments apply to any potentially toxic stimulus for which Exposure Limits need to be set.

It is clear from the above analysis that RFR in combination with other potential disease contributing factors needs to be studied and used as the basis for setting of credible RFR Exposure Limits. Additionally, Exposure Limits for the non-RFR members of the combination should be re-examined for the impact of RFR on their potential for damage.

In fact, the safety objective function should be to minimize damage from the *combination* of potential contributing factors, since what will cause most damage to real people in the real world are (usually) combinations of myriad contributing factors. This requires a quasi-global optimization (on a given combination) rather than a local optimization (on any single constituent). A true global optimization over *ALL* potential combinations of contributing factors would ensure maximal protection for the public.

In the ideal situation for optimization over each combination, we would set a target for the combination based on 'acceptable' damage limits (e.g., less than X cancers per 10,000, and/or changes in selected biomarkers less than Y%, etc). We would then adjust the safety/Exposure Limits on each constituent using an iterative process until the target has been met.

The practical question becomes how do we select the combinations for optimization, and how many combinations do we choose for purposes of approximating the true global optimization? As we have seen, the potential number of combinations to which one could be exposed is enormous. The true global optimization would cover all possible combinations!

It is unclear at this point exactly how the optimization, the iterative procedure, and the combinations selection would be done. The discipline called Cumulative Risk Assessment (CRA), or Cumulative Effects Assessment (CEA), accounts for multiple stressors acting through multiple pathways. It's not clear from some of the CRA/CEA papers I've read exactly how they would address a situation of the scale enumerated in the previous section on combinatorics. Many/most of these studies address relatively few combinations, with some of the studies examining different stressors from the same general class. For readers interested in learning more about CRA/CEA, the [Bibliometrics section \(A\) on Cumulative Risk Assessment](#) provides a number of useful references.

Alternative approaches to identify combination effects

RFR is again used as an example for illustrative purposes.

Clearly, the present laboratory approach will hardly scratch the surface of what is required to generate a comprehensive picture of the potential real-world damage from RFR, given the real-world limitations imposed by combinatorics. If a true global optimization is not possible to determine RFR Exposure Limits, then some less-than-perfect approach will be required. So, what alternatives exist to generate useful results for RFR safety/Exposure Limit setting?

Consider RFR cell towers, since a critical issue facing us presently is the proposed massive expansion of the cell tower network to accommodate the new 5G mobile system. For the past three decades, we have in fact been participating in a massive experiment where a significant number of human beings are exposed to RFR (and are exposed to many other potential contributing factors to disease in parallel) for much of the day, with some exposed all of the day. Many people have unwittingly been serving as 'guinea pigs' in this experiment, and probably the majority of participants have not given 'informed consent'. In the world of research, this is known as unethical research!

This massive experiment is enabled by the construction and operation of hundreds of thousands of cell towers in the USA alone, resulting in exposure of many people to substantial amounts of wireless radiation. The vast majority of these cell towers are located in residential and commercial areas. The few studies that have been done on the adverse health effects of living in close proximity to these towers barely scratch the surface of what is possible. While the results from these studies are alarming because of the increased incidence of *cancer* they present (for those in close proximity to the cell towers), the studies do not identify all the contributing factors combined with the RFR nor control the variables in any way similar to the laboratory experiments.

People throughout the USA (and the world) have exposures to myriad contributing factors with different exposure times and different exposure intensities. Without people being instrumented 24/7 with massive numbers of sensors to measure these temporal exposure patterns, we have little idea of these temporal exposure 'signatures' for any individual, and don't really know what synergies with RFR are operable for any individual.

Despite these data deficiencies, the different cell tower studies arrive at similar conclusions. Cancer incidence starts to increase at cell tower power fluxes on the order of 1000-2000 microwatts/square meter (three orders of magnitude less than shown in the recent NTP [9] and Ramazinni [10] isolated RFR exposure studies), and cancer incidence starts to increase within about 400-500 meters of the antenna [6-8]. There tends to be a latency time of a few years before the cancers appear, as one would expect.

This database should be augmented with supporting data, and 'mined' to the full extent. In particular, we would do a nationwide study of health effects of people living in the proximity of cell towers. We would ensure the cell towers examined are representative of many different types of locations and people. We would provide the residents (or occupants, for commercial buildings near cell towers) questionnaires similar to those proposed for diagnostics in our recent Alzheimer's Disease reversal monograph [14].

We would provide a list of potential contributing factors, and the respondents would provide some idea of their exposure to these contributing factors. They would also be asked to supply their medical history, including the timing of significant health changes. In parallel, we would instrument their house rooms/office rooms to measure RFR power flux trajectories over time. The final result would provide a comprehensive (albeit imperfect) picture of the adverse impacts of existing cell towers on health. It would incorporate all operable combinations by default, although the details of many of these combination components would remain unknown.

Relation of Biomedical Literature Findings to Setting of Exposure Limits

The above sections contain the implicit assumption that the (combinatorics constrained) existing data in the biomedical literature relevant to setting of Exposure Limits is fully taken into account when setting Exposure Limits. They also contain the assumption that the existing data in the biomedical literature can be trusted for accuracy. Both these assumptions may not be valid, for some cases.

For example, the Bioinitiative Report [11] and the recent Pall study [12] present copious examples of myriad types of adverse health impacts from athermal (non-heating) non-ionizing radiation, ranging from moderate to life-threatening. Yet, these athermal impacts are ignored completely by the FCC guidelines. For RFR, the FCC Exposure Limits (based on heating of tissue) are approximately six orders of magnitude above those shown to cause adverse health effects from single and multi-stressor studies. For all practical purposes, *the FCC guidelines are non-protective* for athermal exposures!

Is the setting of RFR Exposure Limits a unique case, or does it happen far more frequently than the public realizes? [Appendix 3](#) contains another example, that of water fluoridation. According to the statements of a senior EPA toxicologist (who was fired for his remarks, then later re-instated), data from a single stressor experiment showing many instances of *cancer* associated with water fluoridation was downgraded by the government program manager for the research.

Reference [15], from which some of the data for [Appendix 3](#) were taken, provides other examples of data manipulation that could impact setting of Exposure Limits. There is little reason to believe that the above examples of discrepancies between 1) results from single and multi-stressor experiments already conducted and 2) Exposure Limits set eventually are rare, especially for substances that are commercially or militarily sensitive.

In summary:

- Combinations of stressors usually lower the levels of each constituent associated with damage compared to levels of that constituent tested in isolation
- Exposure to combinations of stressors reflects the real-world
- Comprehensive testing of these combinations is severely limited by combinatorial considerations
- The results from some of these (mainly) single stressor and multi-stressor experiments that have been conducted may be manipulated and/or ignored for the purposes of setting Exposure Limits

CONCLUSIONS

Combining potential disease contributing factors typically reduces the threshold levels required to cause adverse effects from a particular exposure for any of the component contributing factors associated with the disease. Studies including these combinations are necessary to set credible safe Exposure Limits.

This monograph has presented two approaches for obtaining required combination data: lab animal (typically rodent) experiments with 'tight' controls on the contributing factor exposures, and epidemiological studies on health effects associated with exposures to contributing factors. The former approach has limitations based on species differences between test animals and humans, and sheer numbers of experiments required to approach the combinations reflective of the real-world. The latter approach has limitations based on not knowing the full 'signature' of each individual's exposure to potential disease contributing factors.

Despite their limitations, both approaches are useful. The former approach can provide relative impacts of adding contributing factors and observing the decrease in a given contributing factor threshold dose required to initiate serious diseases. It can also provide insight to biological mechanisms. The latter approach can show macro-level results of the adverse impacts of many contributing factors, even though the details of some of these contributing factors are unknown.

As shown in the [Introduction](#), most of these experiments used to determine Exposure Limits involve one 'stressor' in isolation (single stressor experiments). It is also my impression, from having read many thousands of combination effects papers across many substances and diseases, that combination enhancement effects are ubiquitous across contributing factors and their impacts on disease. Therefore, *single stressor experiments as the main determinants for safety/Exposure Limits may be insufficient for human health protection from these potentially toxic contributing factors.*

It should be obvious to the reader that any Exposure Limits/Safety Limits depending in part or in whole on experiments run in isolation (single stressor experiments) will probably produce Exposure Limits that are above the level where significant adverse health effects begin to appear. We would not know the magnitude of the gap between 1) Exposure Limits that strongly depend on single stressor results and 2) Exposure Limits that would result from comprehensive potentially toxic stimuli combination studies until these combination studies have been conducted and their combination effects identified.

There is no reason to believe a priori that this gap would not be large for many potentially toxic stimuli. In other words, there is no reason to believe today that ANY of the Exposure Limits on potentially toxic stimuli that have been set by ANY of the regulatory agencies are fully protective against serious adverse health effects. Some Exposure Limits may be relatively more protective than others due to 1) results from lab and epidemiological studies being considered objectively, 2) safety factors being incorporated in decision-making, and 3) studies beyond single stressor being incorporated in the final determination. None have the full evidentiary base to inspire high levels of confidence in protection. Some Exposure Limits, such as those on RFR, offer essentially no protection for athermal exposures, based on what has been demonstrated and reported in the biomedical literature.

We will never be able to obtain a true global optimization over all potential combinations of potentially toxic stimuli to minimize adverse combination enhancement effects. However, it is imperative to go beyond the first-order approximation of single stressor experiments for setting Exposure Limits. Higher-order approximations afforded by combined stressor experiments will provide more realistic Exposure Limits for damage control.

REFERENCES

- [1] Sexton K. Cumulative risk assessment: an overview of methodological approaches for evaluating combined health effects from exposure to multiple environmental stressors. *International journal of environmental research and public health*. 2012;9(2):370-90.
- [2] Hernandez AF, Tsatsakis AM. Human exposure to chemical mixtures: Challenges for the integration of toxicology with epidemiology data in risk assessment. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2017;103:188-93.
- [3] Maffini MV, Neltner TG. Brain drain: the cost of neglected responsibilities in evaluating cumulative effects of environmental chemicals. *Journal of epidemiology and community health*. 2015;69(5):496-9.
- [4] Kostoff RN, Lau CGY. Modified health effects of non-ionizing electromagnetic radiation combined with other agents reported in the biomedical literature. in C.D. Geddes (ed.), *Microwave Effects on DNA and Proteins*. Chapter 4. 97-157. © Springer International Publishing AG 2017. DOI 10.1007/978-3-319-50289-2_4.
(http://stip.gatech.edu/wp-content/uploads/2017/03/371048_1_En_4_Chapter_OnlinePDF.pdf)
- [5] Kostoff RN, Lau CGY. Combined biological and health effects of electromagnetic fields and other agents in the published literature. *Technological Forecasting & Social Change*. 2013;80(7):1331-1349.
- [6] Eger H, Hagen KU, Lucas B, Vogel P, Voit H (2004) The influence of being physically near to a cell phone transmission mast on the incidence of cancer. *Umwelt Medizin Gesellschaft*. 2004;17(4).
- [7] Levitt BB, Lai H (2010) Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays. *Environ Rev*. 2010;18:369–395.
- [8] Wolf R, Wolf D. Increased incidence of cancer near a cell-phone transmitter station. *Int J Cancer* 2004;1(2):123–128.
- [9] Toxicology and carcinogenesis studies in Hsd:sprague dawley SD rats exposed to whole-body radio frequency radiation at a frequency (900 MHz) and modulations (GSM and CDMA) used by cell phones; NTP TR 595; National Toxicology Program, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services. March 2018.
- [10] L. Bua, E. Tibaldi, L. Falcioni, M. Lauriola, L..... F. Belpoggi. Results of lifespan exposure to continuous and intermittent extremely low frequency electromagnetic fields (ELFEMF) administered alone to Sprague Dawley rats. *Environmental Research*. 2018;164:271-279.
- [11] The Bioinitiative Report. 2012. <http://www.bioinitiative.org/>
- [12] Pall ML. 5G: Great risk for EU, U.S. and international health! Compelling evidence for eight distinct types of great harm caused by electromagnetic field (EMF) exposures and the mechanism that causes them. 2018.
<http://www.emfsa.co.za/wp-content/uploads/2018/04/pall-to-eu-on-5g-harm-march-2018.pdf>
- [13] Kostoff, RN. Pervasive Causes of Disease. Georgia Institute of Technology. 2015. PDF. <
<http://hdl.handle.net/1853/53714> >
- [14] Kostoff RN, Porter AL, Buchtel HA. Prevention and reversal of Alzheimer's disease: treatment protocol. Georgia Institute of Technology. 2018. PDF. <https://smartech.gatech.edu/handle/1853/59311>.
- [15] Kostoff RN. Under-reporting of adverse events in the biomedical literature. 2016. *Journal of Data and Information Science*. 1:4. 10-32. DOI: 10.20309/jdis.201623.
http://manu47.magtech.com.cn/Jwk3_jdis/EN/article/searchArticleResult.do#1

[16] Interview. 1995. Interview with EPA's Dr. William Marcus on NTP's Fluoride/Cancer Study.
<http://fluoridealert.org/content/marcus-interview/>.

[17] <http://www.toxicteeth.org/health/cancer/ntp/marcus-memo.html>.

[18] <http://www.actionpa.org/fluoride/hirzy.html>.

APPENDICES

Appendix 1 - Examples of non-RFR stimuli combination effects in biomedicine

The format of these examples is the title of the paper in quotes ("") followed by (typically) a quoted sentence or two from the abstract in parentheses ().

1. "Synergistic toxicity produced by mixtures of biocompatible gold nanoparticles and widely used surfactants."

(These mixtures produced synergistic toxicity at concentrations where the individual components were benign.)

2. "Synergistic action of the nephrotoxic mycotoxins ochratoxin A and citrinin at nanomolar concentrations in human proximal tubule-derived cells."

(Only concurrent but not individual exposure to OTA and CIT at nanomolar concentrations led to (i) an increase of TNF protein and mRNA, (ii) a decrease of COX-2 protein and mRNA, (iii) a decrease of E-cadherin protein and (iv) an increase of vimentin and alpha-SMA protein.)

3. "DNA damage in rat lymphocytes treated in vitro with iron cations and exposed to 7 Mt magnetic fields (Static Or 50 Hz)."

(Lymphocyte exposure to MF at 7 mT did not increase the number of cells with DNA damage in the comet assay. Incubation of lymphocytes with 10 mug/ml FeCl₂ did not produce a detectable damage of DNA either. However, when the FeCl₂-incubated lymphocytes were simultaneously exposed to 7 mT MF the number of damaged cells was significantly increased and reached about 20% for static MF and 15% for power frequency MF.)

4. "Concurrent administration of diethylhexyl phthalate reduces the threshold dose at which bisphenol A disrupts blastocyst implantation and cadherins in mice."

"Stress lowers the threshold dose at which bisphenol A disrupts blastocyst implantation, in conjunction with decreased uterine closure and e-cadherin"

5. "Synergistic toxicity of zno nanoparticles and dimethoate in mice: Enhancing their biodistribution by synergistic binding of serum albumin and dimethoate to zno nanoparticles "

(Although nano ZnO was low toxic to mice, coexposure to nano ZnO and DM significantly enhanced DM-induced oxidative damage in the liver.)

6. "Adverse effect of combination of chronic psychosocial stress and high fat diet on hippocampus-dependent memory in rats."

(DTC value for above groups indicated that chronic stress or HFD, alone, resulted in a mild impairment of spatial memory, but the combination of chronic stress and HFD resulted in a more severe and long-lasting memory impairment.)

7. "Neurotoxicity induced by methamphetamine-heroin combination in PC12 cells"

(These results suggest that the combination of METH and heroin is more neurotoxic than either drug alone)

8. "Impaired ecosystem process despite little effects on populations: modeling combined effects of warming and toxicants"

(Our results suggest that exposure to the same amount of toxicants can disproportionately compromise ecosystem processing depending on global warming scenarios; for example, reducing organismal feeding rates by 50% will reduce resource processing by 50% in current temperature conditions, but by up to 200% with warming of 4 degrees C.)

9. "Photosensitizing agents and the risk of non-melanoma skin cancer: A population-based case-control study"

(Certain commonly prescribed photosensitizing medications may enhance the risk of developing SCC [squamous cell carcinoma], especially in individuals with a sun sensitive phenotype, and may increase the risk of developing BCC [basal cell carcinoma] and incidence of BCC at a younger age.)

10. "Occupational syncarcinogenesis in the skin - combined effects of two carcinogens from the German occupational disease list"

(Following adequate cumulative occupational exposure to natural UV light as well as occupational exposure to polycyclic aromatic hydrocarbons, NMSC or its precursor lesions arising in UV-exposed areas should be reported.....in terms of syncarcinogenesis".)

11. "The synergistic toxicity of the multiple chemical mixtures: Implications for risk assessment in the terrestrial environment"

(In four-component and five-component mixtures, the synergistic effects predominated at lower effect levels, while the patterns of interactions found in six, seven, and eight-component mixtures displayed synergism..... the relevance of synergistic effects increase with the complexity of the mixture.)

Appendix 2 - Examples of RFR stimuli combination effects in biomedicine

The following four items are examples of combination effects that include RFR as one constituent of the combination:

1. "The effect of 900 and 1800MHz GSM-like radiofrequency irradiation and nicotine sulfate administration on the embryonic development of *Xenopus laevis*"

(However, the combined effects of GSM-like RF-EMR and NS on *Xenopus* embryos were more severe than the effect of RF-EMR or NS alone.)

2. "Mobile phone use, blood lead levels, and attention deficit hyperactivity symptoms in children: A longitudinal study"

(The results suggest that simultaneous exposure to lead and RF from mobile phone use was associated with increased ADHD symptom risk)

3. "Tumor promotion by exposure to radiofrequency electromagnetic fields below exposure limits for humans"

(The exposure devices consisted of eight radial waveguides with 16 cages each, arranged in stacks of two and connected to power amplifiers and RF-generators.....At day 14 p.c., the females in the exposure devices were injected (i.p.) with ethylnitrosourea (ENU).....at a dose of 40 mg/kg in saline.....Numbers of tumors of the lungs and livers in exposed animals were significantly higher than in sham-exposed controls. In addition, lymphomas were also found to be significantly elevated by exposure).

4. "Suppressive effect of electromagnetic field on analgesic activity of tramadol in rats"

(High frequency electromagnetic fields of 1500 and 1800 MHz when applied alone, did not influence pain perception threshold to thermal stimulus, however it presented an unwanted effect diminishing analgesic action of tramadol.)

Items 1 - 3 are additive or synergistic combinations that include RFR. All the example combinations shown consist of two stimuli. This is typical of lab experiments reported in the literature. Combinations of more than two stimuli in lab experiments are relatively rare, because of the combinatorics shown in the [Analysis](#) section.

Item 4 reflects antagonism at work in the combination. Combining EMF (at frequencies characteristic of cell phones/cell towers) with Tramadol reduced Tramadol's analgesic effect. In general, when calcium ion flow into neuronal cells is *reduced*, analgesic effects can be *increased*. In some regions of parameter space, exposure to EMF can activate the voltage-gated calcium channels, and could *increase* the flow of calcium into the neuronal cells [12]. Thus, in some cases, the effects of the EMF could *antagonize* the effects of the analgesic.

The effects shown in item 4 would need to be validated further for other RFR frequencies and other analgesics. If they are validated in much more extensive experiments, this could have major ramifications for the present-day nationwide opioid 'epidemic', as described in the following.

Potential contribution of RFR to opioid epidemic

The opioid 'epidemic' has been receiving much attention recently from myriad organizations, including the Administration and Congress. Given that this 'epidemic' is national/global, its causative factors must be operating at a national/global level.

Why are we having this 'epidemic'? Are more people getting injured, who require such pain-killers? Doubtful, given the myriad safety measures we have introduced into our workplaces and environment. Are surgeries becoming more painful? Doubtful, given the trend of reduced surgical invasiveness. What, then, would account for this 'epidemic'?

For simplicity, assume opioid addiction has two major categories of cause: non-pain-related and pain-related. The non-pain-related component tends to focus on individual-centric problems, such as peer pressure, impulsiveness, short-term outlook, potential genetic predisposition to addictive behavior, etc. The pain-related component encompasses physical and other types of pain.

It's difficult to see why there would be such a rapid increase in the non-pain-related causes of opioid addiction in recent years. These opioids have been readily accessible for a long time; why would the above individual-centric problems suddenly cause dramatic increases in their use? These individual-centric problems are certainly important and deserve attention, but we also need to look further.

It is far less difficult to explain the increase in the pain-related causes of opioid addiction (over and above the over-prescribing of opioids for pain resulting from myriad medical conditions), even though many stakeholder groups prefer to keep the main focus on the individual-centric problems.

Reference [13] shows there are many hundreds of 'pervasive' contributing factors that impact more than a threshold number of diseases. Most of the 4,000 diseases examined in [13] are chronic; their major symptoms take a long time to emerge. During the latency period, however, adverse impacts increase in the major networks of the body: the immune system, the neural system, the endocrine system, the circulatory system, etc. Given the strong inter-relationships among these networks, any adverse impacts on one network will have a ripple effect on the other networks. These adverse impacts would translate into symptoms, causing physical, mental, psychological, emotional, etc, discomfort. Taking more and stronger opioids is one approach to alleviate these increasing discomforts.

Many of these pervasive contributing factors result from the modern technology that has entered our workplaces and environment in recent years, relatively unregulated. Since the mid-90s, we have seen an explosion of wireless technology (cell phones, cell towers, WiFi, etc), increases in the use of pesticides such as glyphosate, increases in the number of vaccines on the recommended schedule, and myriad other technologies mentioned in [13]. Accompanying this rapid increase in inadequately tested and regulated technologies has been a parallel increase in harmful behaviors resulting from the technology introduction. Prolonged sitting at computers (prolonged sitting shown to be a pervasive cause of many diseases) is only one of many possible examples.

What we may have beyond the non-pain component is an increased opioid response to myriad pain-producing epidemics of our own making. We have a wireless radiation epidemic; we have an untested vaccine epidemic; we have a pesticide overuse epidemic! We have an epidemic of effectively untested and unregulated technologies flooding into the commercial, military, and personal sectors, and driving the increases in non-communicable diseases. These epidemics in combination cause increased discomfort, pain, and symptoms. We respond by increasing our use of opioids! Rather than face the existence of these *pain-causing* epidemics, we focus on the opioid response *pain-killing* epidemic.

Items 1 - 4 show that combinations of stimuli including RFR can both 1) increase symptoms and pain, and 2) reduce analgesic effects (the latter effect also being another variant on increasing pain). And, these four examples only involve combinations of RFR and one other stimulus. What happens in the case of real-world myriad stimuli in combination? Why wouldn't some of them exacerbate the pain-increasing effects of RFR and the analgesia decreasing effects of RFR? We can easily imagine a self-reinforcing situation with a large stimuli combination where 1) some members of the combination act in concert with the RFR to increase adverse symptoms and pain, and 2) other members of the combination act in concert with the RFR to decrease the analgesic effects of opioids given to reduce the pain. This would motivate the individual affected to increase the use of opioids to combat both the pain increase and the analgesia decrease from the combination above. This sequence increases the likelihood of opioid overdose!

Appendix 3 - EPA/NTP study on health effects of water fluoridation

This appendix summarizes a single stressor study used as one component in the determination of the safety of fluoridation. It derives from my JDIS paper [15], where I presented the example of EPA's addressing safety limits of fluoridation (p.19). I summarized the issue as follows: "Dr. William Marcus was a toxicologist and Senior Science Advisor at EPA. He reported potential cover-up of cancers (by the National Toxicology Program) resulting from fluoride ingestion [16], and was fired in 1992. He challenged this decision in court, and was re-instated."

The cover-up (above) referred to re-stating the results of a study performed by an NTP contractor. Marcus wrote an internal memo describing an NTP contractor review meeting, where every one of the cancers reported by the contractor had been downgraded by the NTP [17].

At his 1995 interview [16], Dr. Marcus described the NTP actions at the review meeting thusly: "Now I've been in the toxicology business looking at studies of this nature for nearly 25 years and I've never seen that; never ever seen where every single endpoint that was a cancer endpoint had been downgraded.....I found that very suspicious and I went to see an investigator in the Congress at the suggestion of my friend Bob Carton. And this gentleman and his staff investigated very thoroughly and found out that *the scientists at the NTP down at Research Triangle Park had been coerced to change their findings.*"

In Senate testimony that included comments on the NTP final report on the contractor study [18], Dr. William Hirzy stated: "In 1990, the results of the National Toxicology Program cancer bioassay on sodium fluoride were published, *the initial findings of which would have ended fluoridation.* But a special commission was hastily convened to review the findings, resulting in the salvation of fluoridation through systematic down-grading of the evidence of carcinogenicity. The final, published version of the NTP report says that there is, "equivocal evidence of carcinogenicity in male rats," changed from "clear evidence of carcinogenicity in male rats.""

There is no reason to believe that EPA is the only government organization that would manipulate results to achieve a predetermined agenda, or fluorine is the only toxic stimulus for which this was done. In my JDIS paper [15], I listed similar distortions of results by other regulatory agencies, and could have listed many more examples had I had the space!

BIBLIOGRAPHY

A. Cumulative Risk Assessment Bibliography

- Abt E, Rodricks JV, Levy JI, Zeise L, Burke TA. Science and decisions: advancing risk assessment. *Risk analysis : an official publication of the Society for Risk Analysis*. 2010;30(7):1028-36.
- Alexeeff GV, Faust JB, August LM, Milanes C, Randles K, Zeise L, et al. A screening method for assessing cumulative impacts. *International journal of environmental research and public health*. 2012;9(2):648-59.
- Alfredo KA, Seidel C, Ghosh A, Roberson JA. Using a relative health indicator (RHI) metric to estimate health risk reductions in drinking water. *Environmental monitoring and assessment*. 2017;189(3):124.
- Alves S, Tilghman J, Rosenbaum A, Payne-Sturges DC. U.S. EPA authority to use cumulative risk assessments in environmental decision-making. *International journal of environmental research and public health*. 2012;9(6):1997-2019.
- Andersen ME, Dennison JE. Mechanistic approaches for mixture risk assessments-present capabilities with simple mixtures and future directions. *Environmental toxicology and pharmacology*. 2004;16(1-2):1-11.
- Assuncao R, Vasco E, Nunes B, Loureiro S, Martins C, Alvito P. Single-compound and cumulative risk assessment of mycotoxins present in breakfast cereals consumed by children from Lisbon region, Portugal. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2015;86:274-81.
- Backhaus T, Faust M, Kortenkamp A. Cumulative risk assessment: a European perspective on the state of the art and the necessary next steps forward. *Integrated environmental assessment and management*. 2013;9(4):547-8.
- Ball MA, Noble BF, Dube MG. Valued ecosystem components for watershed cumulative effects: an analysis of environmental impact assessments in the South Saskatchewan River watershed, Canada. *Integrated environmental assessment and management*. 2013;9(3):469-79.
- Ball M, Somers G, Wilson JE, Tanna R, Chung C, Duro DC, et al. Scale, assessment components, and reference conditions: issues for cumulative effects assessment in Canadian watersheds. *Integrated environmental assessment and management*. 2013;9(3):370-9.
- Barzyk TM, Wilson S, Wilson A. Community, state, and federal approaches to cumulative risk assessment: challenges and opportunities for integration. *International journal of environmental research and public health*. 2015;12(5):4546-71.
- Bechaux C, Zeilmaker M, Merlo M, Bokkers B, Crepet A. An integrative risk assessment approach for persistent chemicals: a case study on dioxins, furans and dioxin-like PCBs in France. *Regulatory toxicology and pharmacology : RTP*. 2014;70(1):261-9.
- Benson R. Hazard to the developing male reproductive system from cumulative exposure to phthalate esters--dibutyl phthalate, diisobutyl phthalate, butylbenzyl phthalate, diethylhexyl phthalate, dipentyl phthalate, and diisononyl phthalate. *Regulatory toxicology and pharmacology : RTP*. 2009;53(2):90-101.
- Boobis AR, Ossendorp BC, Banasiak U, Hamey PY, Sebestyen I, Moretto A. Cumulative risk assessment of pesticide residues in food. *Toxicology letters*. 2008;180(2):137-50.
- Boon PE, Van der Voet H, Van Raaij MTM, Van Klaveren JD. Cumulative risk assessment of the exposure to organophosphorus and carbamate insecticides in the Dutch diet. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2008;46(9):3090-8.

Borg D, Lund B-O, Lindquist N-G, Hakansson H. Cumulative health risk assessment of 17 perfluoroalkylated and polyfluoroalkylated substances (PFASs) in the Swedish population. *Environment international*. 2013;59:112-23.

Borgert CJ, Sargent EV, Casella G, Dietrich DR, McCarty LS, Golden RJ. The human relevant potency threshold: reducing uncertainty by human calibration of cumulative risk assessments. *Regulatory toxicology and pharmacology : RTP*. 2012;62(2):313-28.

Bosgra S, van der Voet H, Boon PE, Slob W. An integrated probabilistic framework for cumulative risk assessment of common mechanism chemicals in food: an example with organophosphorus pesticides. *Regulatory toxicology and pharmacology : RTP*. 2009;54(2):124-33.

Brewer LE, Wright JM, Rice G, Neas L, Teuschler L. Causal inference in cumulative risk assessment: The roles of directed acyclic graphs. *Environment international*. 2017;102:30-41.

Brock WJ, Rodricks JV, Rulis A, Dellarco VL, Gray GM, Lane RW. Food safety: risk assessment methodology and decision-making criteria. *International journal of toxicology*. 2003;22(6):435-51.

Cabrera Paez Y, Aguilar Betancourt C, Gonzalez-Sanson G. Reproductive and morphological indicators of the fish *Gambusia puncticulata* (Poeciliidae) in very polluted sections of Almendares River, Cuba. *Revista de biologia tropical*. 2008;56(4):1991-2004.

Caldas ED, Tressou J, Boon PE. Dietary exposure of Brazilian consumers to dithiocarbamate pesticides-- a probabilistic approach. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2006;44(9):1562-71.

Callahan MA, Sexton K. If cumulative risk assessment is the answer, what is the question? *Environmental health perspectives*. 2007;115(5):799-806.

Castorina R, Bradman A, McKone TE, Barr DB, Harnly ME, Eskenazi B. Cumulative organophosphate pesticide exposure and risk assessment among pregnant women living in an agricultural community: a case study from the CHAMACOS cohort. *Environmental health perspectives*. 2003;111(13):1640-8.

Caudeville J, Ioannidou D, Boulvert E, Bonnard R. Cumulative Risk Assessment in the Lorraine Region: A Framework to Characterize Environmental Health Inequalities. *International journal of environmental research and public health*. 2017;14(3).

Chahine T, Schultz BD, Zartarian VG, Xue J, Subramanian SV, Levy JI. Modeling joint exposures and health outcomes for cumulative risk assessment: the case of radon and smoking. *International journal of environmental research and public health*. 2011;8(9):3688-711.

Chang JW, Chen CY, Yan BR, Chang MH, Tseng SH, Kao YM, et al. Cumulative risk assessment for plasticizer-contaminated food using the hazard index approach. *Environmental pollution (Barking, Essex : 1987)*. 2014;189:77-84.

Chang J-W, Lee C-C, Pan W-H, Chou W-C, Huang H-B, Chiang H-C, et al. Estimated Daily Intake and Cumulative Risk Assessment of Phthalates in the General Taiwanese after the 2011 DEHP Food Scandal. *Scientific reports*. 2017;7:45009.

Chari R, Burke TA, White RH, Fox MA. Integrating susceptibility into environmental policy: an analysis of the national ambient air quality standard for lead. *International journal of environmental research and public health*. 2012;9(4):1077-96.

Chen JJ, Chen YJ, Rice G, Teuschler LK, Hamernik K, Protzel A, et al. Using dose addition to estimate cumulative risks from exposures to multiple chemicals. *Regulatory toxicology and pharmacology : RTP*. 2001;34(1):35-41.

Chen Y, Li L-N, Yang C-Q, Hao Z-P, Sun H-K, Li Y. Countermeasures for priority control of toxic VOC pollution. *Huan jing ke xue= Huanjing kexue*. 2011;32(12):3469-75.

Christensen KLY, Makris SL, Lorber M. Generation of hazard indices for cumulative exposure to phthalates for use in cumulative risk assessment. *Regulatory toxicology and pharmacology* : RTP. 2014;69(3):380-9.

Colnot T, Dekant W. Approaches for grouping of pesticides into cumulative assessment groups for risk assessment of pesticide residues in food. *Regulatory toxicology and pharmacology* : RTP. 2017;83:89-99.

Cooney CM. EPA charts new course in draft cumulative risk assessment for pesticides. *Environmental science & technology*. 1999;33(21):445A-6A.

Dale VH, Biddinger GR, Newman MC, Oris JT, Suter GW, Thompson T, et al. Enhancing the ecological risk assessment process. *Integrated environmental assessment and management*. 2008;4(3):306-13.

de Gavelle E, de Lauzon-Guillain B, Charles M-A, Chevrier C, Hulin M, Sirot V, et al. Chronic dietary exposure to pesticide residues and associated risk in the French ELFE cohort of pregnant women. *Environment international*. 2016;92-93:533-42.

DeFur PL, Evans GW, Cohen Hubal EA, Kyle AD, Morello-Frosch RA, Williams DR. Vulnerability as a function of individual and group resources in cumulative risk assessment. *Environmental health perspectives*. 2007;115(5):817-24.

Dewalque L, Charlier C, Pirard C. Estimated daily intake and cumulative risk assessment of phthalate diesters in a Belgian general population. *Toxicology letters*. 2014;231(2):161-8.

Dong R, Zheng J, Zhang M, Chen J, Zhang H, Gao X, et al. The concentrations and cumulative risk assessment of phthalates in general population from Shanghai: The comparison between groups with different ages. *The Science of the total environment*. 2018;637-638:871-80.

Dube MG, Duinker P, Greig L, Carver M, Servos M, McMaster M, et al. A framework for assessing cumulative effects in watersheds: an introduction to Canadian case studies. *Integrated environmental assessment and management*. 2013;9(3):363-9.

Dube MG, Muldoon B, Wilson J, Maracle KtB. Accumulated state of the Yukon River watershed: part I critical review of literature. *Integrated environmental assessment and management*. 2013;9(3):426-38.

Dube MG, Wilson JE. Accumulated state assessment of the Peace-Athabasca-Slave River system. *Integrated environmental assessment and management*. 2013;9(3):405-25.

Dube MG, Wilson JE, Waterhouse J. Accumulated state assessment of the Yukon River watershed: part II quantitative effects-based analysis integrating Western science and traditional ecological knowledge. *Integrated environmental assessment and management*. 2013;9(3):439-55.

Dube M, Johnson B, Dunn G, Culp J, Cash K, Munkittrick K, et al. Development of a new approach to cumulative effects assessment: a northern river ecosystem example. *Environmental monitoring and assessment*. 2006;113(1-3):87-115.

Duggan A, Charnley G, Chen W, Chukwudebe A, Hawk R, Krieger RI, et al. Di-alkyl phosphate biomonitoring data: assessing cumulative exposure to organophosphate pesticides. *Regulatory toxicology and pharmacology* : RTP. 2003;37(3):382-95.

Duinker PN, Greig LA. The impotence of cumulative effects assessment in Canada: ailments and ideas for redeployment. *Environmental management*. 2006;37(2):153-61.

Eggers MJ, Doyle JT, Lefthand MJ, Young SL, Moore-Nall AL, Kindness L, et al. Community Engaged Cumulative Risk Assessment of Exposure to Inorganic Well Water Contaminants, Crow Reservation, Montana. *International journal of environmental research and public health*. 2018;15(1).

Ellickson KM, Sevcik SM, Burman S, Pak S, Kohlasch F, Pratt GC. Cumulative risk assessment and environmental equity in air permitting: interpretation, methods, community participation and

implementation of a unique statute. *International journal of environmental research and public health*. 2011;8(11):4140-59.

Ermiler S, Scholze M, Kortenkamp A. Seven benzimidazole pesticides combined at sub-threshold levels induce micronuclei in vitro. *Mutagenesis*. 2013;28(4):417-26.

Fenner-Crisp PA. FQPA science issues: common mechanism of toxicity and cumulative risk assessment. *Regulatory toxicology and pharmacology : RTP*. 2000;31(3):308-10.

Fournier K, Tebby C, Zeman F, Glorennec P, Zmirou-Navier D, Bonvallot N. Multiple exposures to indoor contaminants: Derivation of benchmark doses and relative potency factors based on male reprotoxic effects. *Regulatory toxicology and pharmacology : RTP*. 2016;74:23-30.

Fournier K, Baumont E, Glorennec P, Bonvallot N. Relative toxicity for indoor semi volatile organic compounds based on neuronal death. *Toxicology letters*. 2017;279:33-42.

Fournier K, Glorennec P, Bonvallot N. An exposure-based framework for grouping pollutants for a cumulative risk assessment approach: case study of indoor semi-volatile organic compounds. *Environmental research*. 2014;130:20-8.

Fox MA. Evaluating cumulative risk assessment for environmental justice: a community case study. *Environmental health perspectives*. 2002;110 Suppl 2:203-9.

Fox MA, Brewer LE, Martin L. An Overview of Literature Topics Related to Current Concepts, Methods, Tools, and Applications for Cumulative Risk Assessment (2007-2016). *International journal of environmental research and public health*. 2017;14(4).

Fox MA, Spicer K, Chosewood LC, Susi P, Johns DO, Dotson GS. Implications of applying cumulative risk assessment to the workplace. *Environment international*. 2018;115:230-8.

Fox MA, Tran NL, Groopman JD, Burke TA. Toxicological resources for cumulative risk: an example with hazardous air pollutants. *Regulatory toxicology and pharmacology : RTP*. 2004;40(3):305-11.

Fromme H, Lahrz T, Kraft M, Fembacher L, Dietrich S, Sievering S, et al. Phthalates in German daycare centers: occurrence in air and dust and the excretion of their metabolites by children (LUPE 3). *Environment international*. 2013;61:64-72.

Gallagher SS, Rice GE, Scarano LJ, Teuschler LK, Bollweg G, Martin L. Cumulative risk assessment lessons learned: a review of case studies and issue papers. *Chemosphere*. 2015;120:697-705.

Gao C-J, Liu L-Y, Ma W-L, Ren N-Q, Guo Y, Zhu N-Z, et al. Phthalate metabolites in urine of Chinese young adults: Concentration, profile, exposure and cumulative risk assessment. *The Science of the total environment*. 2016;543(Pt A):19-27.

Gao H, Xu Y-Y, Huang K, Ge X, Zhang Y-W, Yao H-Y, et al. Cumulative risk assessment of phthalates associated with birth outcomes in pregnant Chinese women: A prospective cohort study. *Environmental pollution (Barking, Essex : 1987)*. 2017;222:549-56.

Gao H, Zhu B-B, Tao X-Y, Zhu Y-D, Tao X, Tao F-B. Temporal variability of cumulative risk assessment on phthalates in Chinese pregnant women: repeated measures analysis. *Environmental science & technology*. 2018.

Giovanoulis G, Alves A, Papadopoulou E, Cousins AP, Schutze A, Koch HM, et al. Evaluation of exposure to phthalate esters and DINCH in urine and nails from a Norwegian study population. *Environmental research*. 2016;151:80-90.

Go MJ, Hwang J-Y, Kim D-J, Lee H-J, Jang HB, Park K-H, et al. Effect of genetic predisposition on blood lipid traits using cumulative risk assessment in the korean population. *Genomics & informatics*. 2012;10(2):99-105.

Hartmann C, Uhl M, Weiss S, Koch HM, Scharf S, König J. Human biomonitoring of phthalate exposure in Austrian children and adults and cumulative risk assessment. *International journal of hygiene and environmental health*. 2015;218(5):489-99.

Hass U, Christiansen S, Axelstad M, Scholze M, Boberg J. Combined exposure to low doses of pesticides causes decreased birth weights in rats. *Reproductive toxicology (Elmsford, NY)*. 2017;72:97-105.

Helfand BT, Fought AJ, Loeb S, Meeks JJ, Kan D, Catalona WJ. Genetic prostate cancer risk assessment: common variants in 9 genomic regions are associated with cumulative risk. *The Journal of urology*. 2010;184(2):501-5.

Hennig B, Ormsbee L, McClain CJ, Watkins BA, Blumberg B, Bachas LG, et al. Nutrition can modulate the toxicity of environmental pollutants: implications in risk assessment and human health. *Environmental health perspectives*. 2012;120(6):771-4.

Hennig B, Petriello MC, Gamble MV, Surh Y-J, Kresty LA, Frank N, et al. The role of nutrition in influencing mechanisms involved in environmentally mediated diseases. *Reviews on environmental health*. 2018;33(1):87-97.

Hernandez AF, Gil F, Lacasana M. Toxicological interactions of pesticide mixtures: an update. *Archives of toxicology*. 2017;91(10):3211-23.

Hernandez AF, Tsatsakis AM. Human exposure to chemical mixtures: Challenges for the integration of toxicology with epidemiology data in risk assessment. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2017;103:188-93.

Hines DE, Edwards SW, Conolly RB, Jarabek AM. A Case Study Application of the Aggregate Exposure Pathway (AEP) and Adverse Outcome Pathway (AOP) Frameworks to Facilitate the Integration of Human Health and Ecological End Points for Cumulative Risk Assessment (CRA). *Environmental science & technology*. 2018;52(2):839-49.

Hodgson EE, Essington TE, Halpern BS. Density dependence governs when population responses to multiple stressors are magnified or mitigated. *Ecology*. 2017;98(10):2673-83.

Hodgson EE, Halpern BS. Investigating cumulative effects across ecological scales. *Conservation biology : the journal of the Society for Conservation Biology*. 2018.

Howd RA. Considering changes in exposure and sensitivity in an early life cumulative risk assessment. *International journal of toxicology*. 2010;29(1):71-7.

Howdeshell KL, Hotchkiss AK, Gray LE, Jr. Cumulative effects of antiandrogenic chemical mixtures and their relevance to human health risk assessment. *International journal of hygiene and environmental health*. 2017;220(2 Pt A):179-88.

Howdeshell KL, Rider CV, Wilson VS, Furr JR, Lambright CR, Gray LE, Jr. Dose Addition Models Based on Biologically Relevant Reductions in Fetal Testosterone Accurately Predict Postnatal Reproductive Tract Alterations by a Phthalate Mixture in Rats. *Toxicological sciences : an official journal of the Society of Toxicology*. 2015;148(2):488-502.

Huang H, Barzyk TM. Connecting the Dots: Linking Environmental Justice Indicators to Daily Dose Model Estimates. *International journal of environmental research and public health*. 2016;14(1).

Huang Y, Lu WW, Chen B, You J, Wu M, Li SG. Phthalates in Commercial Chinese Rice Wines: Concentrations and the Cumulative Risk Assessment to Adult Males in Shanghai. *Biomedical and environmental sciences : BES*. 2014;27(10):819-23.

Jeddi MZ, Rastkari N, Ahmadkhaniha R, Yunesian M. Endocrine disruptor phthalates in bottled water: daily exposure and health risk assessment in pregnant and lactating women. *Environmental monitoring and assessment*. 2016;188(9):534.

Jensen AF, Petersen A, Granby K. Cumulative risk assessment of the intake of organophosphorus and carbamate pesticides in the Danish diet. *Food additives and contaminants*. 2003;20(8):776-85.

Jensen BH, Petersen A, Nielsen E, Christensen T, Poulsen ME, Andersen JH. Cumulative dietary exposure of the population of Denmark to pesticides. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2015;83:300-7.

Jones FC, Plewes R, Murison L, MacDougall MJ, Sinclair S, Davies C, et al. Random forests as cumulative effects models: A case study of lakes and rivers in Muskoka, Canada. *Journal of environmental management*. 2017;201:407-24.

Katz Y, Lustig S, Ben-Shlomo I, Kobiler D, Ben-Nathan D. Inhalation anesthetic-induced neuroinvasion by an attenuated strain of West Nile virus in mice. *Journal of medical virology*. 2002;66(4):576-80.

Kennedy MC, van der Voet H, Roelofs VJ, Roelofs W, Glass CR, de Boer WJ, et al. New approaches to uncertainty analysis for use in aggregate and cumulative risk assessment of pesticides. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2015;79:54-64.

Kennon S, Price CP, Mills PG, MacCallum PK, Cooper J, Hooper J, et al. Cumulative risk assessment in unstable angina: clinical, electrocardiographic, autonomic, and biochemical markers. *Heart (British Cardiac Society)*. 2003;89(1):36-41.

Koch HM, Wittassek M, Bruning T, Angerer J, Heudorf U. Exposure to phthalates in 5-6 years old primary school starters in Germany--a human biomonitoring study and a cumulative risk assessment. *International journal of hygiene and environmental health*. 2011;214(3):188-95.

Koppe JG, Bartonova A, Bolte G, Bistrup ML, Busby C, Butter M, et al. Exposure to multiple environmental agents and their effect. *Acta paediatrica (Oslo, Norway : 1992) Supplement*. 2006;95(453):106-13.

Kortenkamp A, Faust M. Combined exposures to anti-androgenic chemicals: steps towards cumulative risk assessment. *International journal of andrology*. 2010;33(2):463-74.

Koval'chuk NM, Omel'chuk ST. Cumulative risk assessment for consumers of agricultural crops polluted with one chemical class pesticide residues (case of triazole fungicides). *Likars'ka sprava*. 2011(7-8):37-43.

Kristensen S, Noble BF, Patrick RJ. Capacity for watershed cumulative effects assessment and management: lessons from the Lower Fraser River Basin, Canada. *Environmental management*. 2013;52(2):360-73.

Larsson MO, Nielsen VS, Brandt CO, Bjerre N, Laporte F, Cedergreen N. Quantifying dietary exposure to pesticide residues using spraying journal data. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2017;105:407-28.

Larsson MO, Sloth Nielsen V, Bjerre N, Laporte F, Cedergreen N. Refined assessment and perspectives on the cumulative risk resulting from the dietary exposure to pesticide residues in the Danish population. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2018;111:207-67.

Lentz TJ, Dotson GS, Williams PRD, Maier A, Gadagbui B, Pandalai SP, et al. Aggregate Exposure and Cumulative Risk Assessment--Integrating Occupational and Non-occupational Risk Factors. *Journal of occupational and environmental hygiene*. 2015;12 Suppl 1:S112-26.

Levy JI. Is epidemiology the key to cumulative risk assessment? *Risk analysis : an official publication of the Society for Risk Analysis*. 2008;28(6):1507-13.

Levy JI, Fabian MP, Peters JL. Meta-Analytic Approaches for Multistressor Dose-Response Function Development: Strengths, Limitations, and Case Studies. *Risk analysis : an official publication of the Society for Risk Analysis*. 2015;35(6):1040-9.

Lewis AS, Sax SN, Wason SC, Campelman SL. Non-chemical stressors and cumulative risk assessment: an overview of current initiatives and potential air pollutant interactions. *International journal of environmental research and public health*. 2011;8(6):2020-73.

Li Z, Nie J, Lu Z, Xie H, Kang L, Chen Q, et al. Cumulative risk assessment of the exposure to pyrethroids through fruits consumption in China - Based on a 3-year investigation. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2016;96:234-43.

Linder SH, Sexton K. Conceptual models for cumulative risk assessment. *American journal of public health*. 2011;101 Suppl 1:S74-81.

Lokke H, Ragas AMJ, Holmstrup M. Tools and perspectives for assessing chemical mixtures and multiple stressors. *Toxicology*. 2013;313(2-3):73-82.

Ma D, Zhang L, Fang Q, Jiang Y, Elliott M. The cumulative effects assessment of a coastal ecological restoration project in China: An integrated perspective. *Marine pollution bulletin*. 2017;118(1-2):254-60.

Macdonell MM, Haroun LA, Teuschler LK, Rice GE, Hertzberg RC, Butler JP, et al. Cumulative risk assessment toolbox: methods and approaches for the practitioner. *Journal of toxicology*. 2013;2013:310904.

Maffini MV, Neltner TG. Brain drain: the cost of neglected responsibilities in evaluating cumulative effects of environmental chemicals. *Journal of epidemiology and community health*. 2015;69(5):496-9.

Marshall S, Gennings C, Teuschler LK, Stork LG, Tornero-Velez R, Crofton KM, et al. An empirical approach to sufficient similarity: combining exposure data and mixtures toxicology data. *Risk analysis : an official publication of the Society for Risk Analysis*. 2013;33(9):1582-95.

Mazaris AD, Germond B. Bridging the gap between climate change and maritime security: Towards a comprehensive framework for planning. *The Science of the total environment*. 2018;635:1076-80.

Meek MEB, Boobis AR, Crofton KM, Heinemeyer G, Raaij MV, Vickers C. Risk assessment of combined exposure to multiple chemicals: A WHO/IPCS framework. *Regulatory toxicology and pharmacology : RTP*. 2011.

Mercier F, Gilles E, Saramito G, Glorennec P, Le Bot B. A multi-residue method for the simultaneous analysis in indoor dust of several classes of semi-volatile organic compounds by pressurized liquid extraction and gas chromatography/tandem mass spectrometry. *Journal of chromatography A*. 2014;1336:101-11.

Mercier F, Glorennec P, Blanchard O, Le Bot B. Analysis of semi-volatile organic compounds in indoor suspended particulate matter by thermal desorption coupled with gas chromatography/mass spectrometry. *Journal of chromatography A*. 2012;1254:107-14.

Meza-Montenegro MM, Gandolfi AJ, Santana-Alcantar ME, Klimecki WT, Aguilar-Apodaca MG, Del Rio-Salas R, et al. Metals in residential soils and cumulative risk assessment in Yaqui and Mayo agricultural valleys, northern Mexico. *The Science of the total environment*. 2012;433:472-81.

Miyake K, Yang W, Hara K, Yasuda K, Horikawa Y, Osawa H, et al. Construction of a prediction model for type 2 diabetes mellitus in the Japanese population based on 11 genes with strong evidence of the association. *Journal of human genetics*. 2009;54(4):236-41.

Moretto A, Bachman A, Boobis A, Solomon KR, Pastoor TP, Wilks MF, et al. A framework for cumulative risk assessment in the 21st century. *Critical reviews in toxicology*. 2017;47(2):85-97.

Moretto A, Di Renzo F, Giavini E, Metruccio F, Menegola E. The use of in vitro testing to refine cumulative assessment groups of pesticides: The example of teratogenic conazoles. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2015;79:65-9.

Moschandrea DJ, Karuchit S. Scenario-model-parameter: a new method of cumulative risk uncertainty analysis. *Environment international*. 2002;28(4):247-61.

Muller AK, Bosgra S, Boon PE, van der Voet H, Nielsen E, Ladefoged O. Probabilistic cumulative risk assessment of anti-androgenic pesticides in food. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2009;47(12):2951-62.

Naghavi M, Libby P, Falk E, Casscells SW, Litovsky S, Rumberger J, et al. From vulnerable plaque to vulnerable patient: a call for new definitions and risk assessment strategies: Part I. *Circulation*. 2003;108(14):1664-72.

Naghavi M, Libby P, Falk E, Casscells SW, Litovsky S, Rumberger J, et al. From vulnerable plaque to vulnerable patient: a call for new definitions and risk assessment strategies: Part II. *Circulation*. 2003;108(15):1772-8.

Noble B, Liu J, Hackett P. The Contribution of Project Environmental Assessment to Assessing and Managing Cumulative Effects: Individually and Collectively Insignificant? *Environmental management*. 2017;59(4):531-45.

Omrane F, Gargouri I, Khadhraoui M, Elleuch B, Zmirou-Navier D. Risk assessment of occupational exposure to heavy metal mixtures: a study protocol. *BMC public health*. 2018;18(1):314.

Orton F, Ermler S, Kugathas S, Rosivatz E, Scholze M, Kortenkamp A. Mixture effects at very low doses with combinations of anti-androgenic pesticides, antioxidants, industrial pollutant and chemicals used in personal care products. *Toxicology and applied pharmacology*. 2014;278(3):201-8.

Pelletier M, Bonvallot N, Glorennec P. Aggregating exposures & cumulating risk for semivolatile organic compounds: A review. *Environmental research*. 2017;158:649-59.

Pelletier M, Bonvallot N, Ramalho O, Mandin C, Wei W, Raffy G, et al. Indoor residential exposure to semivolatile organic compounds in France. *Environment international*. 2017;109:81-8.

Pelletier M, Glorennec P, Mandin C, Le Bot B, Ramalho O, Mercier F, et al. Chemical-by-chemical and cumulative risk assessment of residential indoor exposure to semivolatile organic compounds in France. *Environment international*. 2018;117:22-32.

Peters JL, Fabian MP, Levy JI. Combined impact of lead, cadmium, polychlorinated biphenyls and non-chemical risk factors on blood pressure in NHANES. *Environmental research*. 2014;132:93-9.

Pollock MS, Dube MG, Schryer R. Investigating the link between pulp mill effluent and endocrine disruption: attempts to explain the presence of intersex fish in the Wabigoon River, Ontario, Canada. *Environmental toxicology and chemistry*. 2010;29(4):952-65.

Pop A, Drugan T, Gutleb AC, Lupu D, Cherfan J, Loghin F, et al. Estrogenic and anti-estrogenic activity of butylparaben, butylated hydroxyanisole, butylated hydroxytoluene and propyl gallate and their binary mixtures on two estrogen responsive cell lines (T47D-Kbluc, MCF-7). *Journal of applied toxicology : JAT*. 2018.

Pope C, Karanth S, Liu J. Pharmacology and toxicology of cholinesterase inhibitors: uses and misuses of a common mechanism of action. *Environmental toxicology and pharmacology*. 2005;19(3):433-46.

Pradhan N, Habib H, Venkatappa M, Ebberts T, Duboz R, Shipin O. Framework tool for a rapid cumulative effects assessment: case of a prominent wetland in Myanmar. *Environmental monitoring and assessment*. 2015;187(6):341.

Price PS, Han X. Maximum cumulative ratio (MCR) as a tool for assessing the value of performing a cumulative risk assessment. *International journal of environmental research and public health*. 2011;8(6):2212-25.

Quijano L, Yusa V, Font G, Pardo O. Chronic cumulative risk assessment of the exposure to organophosphorus, carbamate and pyrethroid and pyrethrin pesticides through fruit and vegetables consumption in the region of Valencia (Spain). *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2016;89:39-46.

Ragas AMJ, Oldenkamp R, Preeker NL, Wernicke J, Schlink U. Cumulative risk assessment of chemical exposures in urban environments. *Environment international*. 2011;37(5):872-81.

Reiler E, Jors E, Balum J, Huici O, Alvarez Caero MM, Cedergreen N. The influence of tomato processing on residues of organochlorine and organophosphate insecticides and their associated dietary risk. *The Science of the total environment*. 2015;527-528:262-9.

Rider CV, Boekelheide K, Catlin N, Gordon CJ, Morata T, Selgrade MK, et al. Cumulative risk: toxicity and interactions of physical and chemical stressors. *Toxicological sciences : an official journal of the Society of Toxicology*. 2014;137(1):3-11.

Rider CV, Carlin DJ, Devito MJ, Thompson CL, Walker NJ. Mixtures research at NIEHS: an evolving program. *Toxicology*. 2013;313(2-3):94-102.

Rider CV, Dourson ML, Hertzberg RC, Mumtaz MM, Price PS, Simmons JE. Incorporating nonchemical stressors into cumulative risk assessments. *Toxicological sciences : an official journal of the Society of Toxicology*. 2012;127(1):10-7.

Rodricks JV, Levy JI. Science and decisions: advancing toxicology to advance risk assessment. *Toxicological sciences : an official journal of the Society of Toxicology*. 2013;131(1):1-8.

Rosen MB, Wilson VS, Schmid JE, Gray LE. Gene expression analysis in the ventral prostate of rats exposed to vinclozolin or procymidone. *Reproductive toxicology (Elmsford, NY)*. 2005;19(3):367-79.

Ryan PB, Burke TA, Cohen Hubal EA, Cura JJ, McKone TE. Using biomarkers to inform cumulative risk assessment. *Environmental health perspectives*. 2007;115(5):833-40.

Seeger B, Klawonn F, Nguema Bekale B, Steinberg P. Mixture Effects of Estrogenic Pesticides at the Human Estrogen Receptor alpha and beta. *PloS one*. 2016;11(1):e0147490.

Seitz NE, Westbrook CJ, Dube MG, Squires AJ. Assessing large spatial scale landscape change effects on water quality and quantity response in the lower Athabasca River basin. *Integrated environmental assessment and management*. 2013;9(3):392-404.

Sexton K. Cumulative risk assessment: an overview of methodological approaches for evaluating combined health effects from exposure to multiple environmental stressors. *International journal of environmental research and public health*. 2012;9(2):370-90.

Sexton K, Hattis D. Assessing cumulative health risks from exposure to environmental mixtures - three fundamental questions. *Environmental health perspectives*. 2007;115(5):825-32.

Sexton K, Linder SH. The role of cumulative risk assessment in decisions about environmental justice. *International journal of environmental research and public health*. 2010;7(11):4037-49.

Sexton K, Linder SH. Cumulative risk assessment for combined health effects from chemical and nonchemical stressors. *American journal of public health*. 2011;101 Suppl 1:S81-8.

Shackelford N, Standish RJ, Ripple W, Starzomski BM. Threats to biodiversity from cumulative human impacts in one of North America's last wildlife frontiers. *Conservation biology : the journal of the Society for Conservation Biology*. 2017.

Sielken RL, Jr. Risk metrics and cumulative risk assessment methodology for the FQPA. *Regulatory toxicology and pharmacology* : RTP. 2000;31(3):300-7.

Singh SP, Dwivedi N, Raju KSR, Taneja I, Wahajuddin M. Validation of a Rapid and Sensitive UPLC-MS-MS Method Coupled with Protein Precipitation for the Simultaneous Determination of Seven Pyrethroids in 100 L of Rat Plasma by Using Ammonium Adduct as Precursor Ion. *Journal of analytical toxicology*. 2016;40(3):213-21.

Smith MT, de la Rosa R, Daniels SI. Using exposomics to assess cumulative risks and promote health. *Environmental and molecular mutagenesis*. 2015;56(9):715-23.

Soderlund DM, Clark JM, Sheets LP, Mullin LS, Piccirillo VJ, Sargent D, et al. Mechanisms of pyrethroid neurotoxicity: implications for cumulative risk assessment. *Toxicology*. 2002;171(1):3-59.

Soeborg T, Frederiksen H, Andersson AM. Cumulative risk assessment of phthalate exposure of Danish children and adolescents using the hazard index approach. *International journal of andrology*. 2012;35(3):245-52.

Solomon KR, Wilks MF, Bachman A, Boobis A, Moretto A, Pastoor TP, et al. Problem formulation for risk assessment of combined exposures to chemicals and other stressors in humans. *Critical reviews in toxicology*. 2016;46(10):835-44.

Squires AJ, Dube MG. Development of an effects-based approach for watershed scale aquatic cumulative effects assessment. *Integrated environmental assessment and management*. 2013;9(3):380-91.

Squires AJ, Westbrook CJ, Dube MG. An approach for assessing cumulative effects in a model river, the Athabasca River basin. *Integrated environmental assessment and management*. 2010;6(1):119-34.

Stelzenmuller V, Coll M, Mazaris AD, Giakoumi S, Katsanevakis S, Portman ME, et al. A risk-based approach to cumulative effect assessments for marine management. *The Science of the total environment*. 2018;612:1132-40.

Tamis JE, de Vries P, Jongbloed RH, Lagerveld S, Jak RG, Karman CC, et al. Toward a harmonized approach for environmental assessment of human activities in the marine environment. *Integrated environmental assessment and management*. 2016;12(4):632-42.

Tan Y-M, Clewell H, Campbell J, Andersen M. Evaluating pharmacokinetic and pharmacodynamic interactions with computational models in supporting cumulative risk assessment. *International journal of environmental research and public health*. 2011;8(5):1613-30.

Tan Y-M, Leonard JA, Edwards S, Teeguarden J, Paini A, Egeghy P. Aggregate Exposure Pathways in Support of Risk Assessment. *Current opinion in toxicology*. 2018;9:8-13.

Tenforde AS, Carlson JL, Chang A, Sainani KL, Shultz R, Kim JH, et al. Association of the Female Athlete Triad Risk Assessment Stratification to the Development of Bone Stress Injuries in Collegiate Athletes. *The American journal of sports medicine*. 2017;45(2):302-10.

Teuschler LK, Rice GE, Wilkes CR, Lipscomb JC, Power FW. A feasibility study of cumulative risk assessment methods for drinking water disinfection by-product mixtures. *Journal of toxicology and environmental health Part A*. 2004;67(8-10):755-77.

Tsatsakis AM, Kouretas D, Tzatzarakis MN, Stivaktakis P, Tsarouhas K, Golokhvast KS, et al. Simulating real-life exposures to uncover possible risks to human health: A proposed consensus for a novel methodological approach. *Human & experimental toxicology*. 2017;36(6):554-64.

Tsoutsis CS, Konstantinou IK, Hela DG. Organophosphorus pesticide residues in Greek virgin olive oil: levels, dietary intake and risk assessment. *Food additives & contaminants Part A, Chemistry, analysis, control, exposure & risk assessment*. 2008;25(10):1225-36.

van der Voet H, de Boer WJ, Kruisselbrink JW, Goedhart PW, van der Heijden GWAM, Kennedy MC, et al. The MCRA model for probabilistic single-compound and cumulative risk assessment of pesticides. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2015;79:5-12.

Wallace KB. Mechanisms of pyrethroid neurotoxicity: implications for cumulative risk assessment. *Toxicology*. 2002;171(1):1.

Wang B, Wang H, Zhou W, Chen Y, Zhou Y, Jiang Q. Urinary excretion of phthalate metabolites in school children of China: implication for cumulative risk assessment of phthalate exposure. *Environmental science & technology*. 2015;49(2):1120-9.

Wason SC, Smith TJ, Perry MJ, Levy JI. Using physiologically-based pharmacokinetic models to incorporate chemical and non-chemical stressors into cumulative risk assessment: a case study of pesticide exposures. *International journal of environmental research and public health*. 2012;9(5):1971-83.

Wilkinson CF, Christoph GR, Julien E, Kelley JM, Kronenberg J, McCarthy J, et al. Assessing the risks of exposures to multiple chemicals with a common mechanism of toxicity: how to cumulate? *Regulatory toxicology and pharmacology : RTP*. 2000;31(1):30-43.

Williams PRD, Dotson GS, Maier A. Cumulative Risk Assessment (CRA): transforming the way we assess health risks. *Environmental science & technology*. 2012;46(20):10868-74.

Willsted E, Gill AB, Birchenough SNR, Jude S. Assessing the cumulative environmental effects of marine renewable energy developments: Establishing common ground. *The Science of the total environment*. 2017;577:19-32.

Wittassek M, Koch HM, Angerer J, Bruning T. Assessing exposure to phthalates - the human biomonitoring approach. *Molecular nutrition & food research*. 2011;55(1):7-31.

Wormley DD, Ramesh A, Hood DB. Environmental contaminant-mixture effects on CNS development, plasticity, and behavior. *Toxicology and applied pharmacology*. 2004;197(1):49-65.

Wyatt KH, Griffin R, Guerry AD, Ruckelshaus M, Fogarty M, Arkema KK. Habitat risk assessment for regional ocean planning in the U.S. Northeast and Mid-Atlantic. *PloS one*. 2017;12(12):e0188776.

Xue X, Hong H, Charles AT. Cumulative environmental impacts and integrated coastal management: the case of Xiamen, China. *Journal of environmental management*. 2004;71(3):271-83.

Yang G, Li J, Wang Y, Chen C, Zhao H, Shao K. Quantitative ecotoxicity analysis for pesticide mixtures using benchmark dose methodology. *Ecotoxicology and environmental safety*. 2018;159:94-101.

Yang K, Lam K. Cumulative impact assessment: problems and practice in China mainland and Hong Kong. *Huan jing ke xue= Huanjing kexue*. 2001;22(1):120-5.

Yorita Christensen KL, White P. A methodological approach to assessing the health impact of environmental chemical mixtures: PCBs and hypertension in the National Health and Nutrition Examination Survey. *International journal of environmental research and public health*. 2011;8(11):4220-37.

Young GS, Fox MA, Trush M, Kanarek N, Glass TA, Curriero FC. Differential exposure to hazardous air pollution in the United States: a multilevel analysis of urbanization and neighborhood socioeconomic deprivation. *International journal of environmental research and public health*. 2012;9(6):2204-25.

B. Combined Toxicity and Enhanced Adverse Effects Bibliography

- Ahangarpour A, Alboghobeish S, Orooan AA, Zeidooni L, Samimi A, Afshari G. Effects of Combined Exposure to Chronic High-Fat Diet and Arsenic on Thyroid Function and Lipid Profile in Male Mouse. *Biological trace element research*. 2018;182(1):37-48.
- Ahangarpour A, Alboghobeish S, Rezaei M, Khodayar MJ, Orooan AA, Zainvand M. Evaluation of Diabetogenic Mechanism of High Fat Diet in Combination with Arsenic Exposure in Male Mice. *Iranian journal of pharmaceutical research : IJPR*. 2018;17(1):164-83.
- Almeida A, Calisto V, Esteves VI, Schneider RJ, Soares AMVM, Figueira E, et al. Effects of single and combined exposure of pharmaceutical drugs (carbamazepine and cetirizine) and a metal (cadmium) on the biochemical responses of *R. philippinarum*. *Aquatic toxicology (Amsterdam, Netherlands)*. 2018;198:10-9.
- Aung HM, Huangteerakul C, Panvongsa W, Jensen AN, Chairoungdua A, Sukrong S, et al. Interrogation of ethnomedicinal plants for synthetic lethality effects in combination with deficiency in the DNA repair endonuclease RAD1 using a yeast cell-based assay. *Journal of ethnopharmacology*. 2018.
- Azuma K, Ikeda K, Kagi N, Yanagi U, Osawa H. Physicochemical risk factors for building-related symptoms in air-conditioned office buildings: Ambient particles and combined exposure to indoor air pollutants. *The Science of the total environment*. 2018;616-617:1649-55.
- Balci C, Uzun O, Arici M, Hayran SA, Yuce D, Unal S. Nephrotoxicity of piperacillin-tazobactam combined with vancomycin: Should it be a concern? *International journal of antimicrobial agents*. 2018.
- Battistoni M, Mercurio S, Ficetola GF, Metruccio FC, Menegola E, Pennati R. The Ascidian Embryo Teratogenicity assay in *Ciona intestinalis* as a new teratological screening to test the mixture effect of the co-exposure to ethanol and fluconazole. *Environmental toxicology and pharmacology*. 2018;57:76-85.
- Bauer AK, Velmurugan K, Plottner S, Siegrist KJ, Romo D, Welge P, et al. Environmentally prevalent polycyclic aromatic hydrocarbons can elicit co-carcinogenic properties in an in vitro murine lung epithelial cell model. *Archives of toxicology*. 2018;92(3):1311-22.
- Belden JB, Brain RA. Incorporating the joint toxicity of co-applied pesticides into the ecological risk assessment process. *Integrated environmental assessment and management*. 2018;14(1):79-91.
- Blaise JH, Park JE, Bellas NJ, Gitchell TM, Phan V. Caffeine consumption disrupts hippocampal long-term potentiation in freely behaving rats. *Physiological reports*. 2018;6(5).
- Blossom SJ, Fernandes L, Bai S, Khare S, Gokulan K, Yuan Y, et al. Opposing actions of developmental trichloroethylene and high-fat-diet co-exposure on markers of lipogenesis and inflammation in autoimmune-prone mice. *Toxicological sciences : an official journal of the Society of Toxicology*. 2018.
- Brault M, Olsen TM, Martinez J, Stetson DB, Oberst A. Intracellular Nucleic Acid Sensing Triggers Necroptosis through Synergistic Type I IFN and TNF Signaling. *Journal of immunology (Baltimore, Md : 1950)*. 2018;200(8):2748-56.
- Bucher S, Tete A, Podechard N, Liamin M, Le Guillou D, Chevanne M, et al. Co-exposure to benzo a pyrene and ethanol induces a pathological progression of liver steatosis in vitro and in vivo. *Scientific reports*. 2018;8(1):5963.
- Cao Q, Steinman AD, Wan X, Xie L. Combined toxicity of microcystin-LR and copper on lettuce (*Lactucasativa L.*). *Chemosphere*. 2018;206:474-82.
- Carles L, Joly M, Bonnemoy F, Lereboure M, Donnadiou F, Batisson I, et al. Biodegradation and toxicity of a maize herbicide mixture: mesotrione, nicosulfuron and S-metolachlor. *Journal of hazardous materials*. 2018;354:42-53.

- Chakraborty TR, Gomez V, Adhikari D, Chakraborty S. The Synergism in Hormonal and Cellular Changes in Male Mice on Long Term High Fat Exposure. *Journal of the American College of Nutrition*. 2018;37(4):328-35.
- Chartoumpakis DV, Palliyaguru DL, Wakabayashi N, Fazzari M, Khoo NK, Schopfer FJ, et al. Nrf2 deletion from adipocytes, but not hepatocytes, potentiates systemic metabolic dysfunction after long-term high-fat diet-induced obesity in mice. *American journal of physiology Endocrinology and metabolism*. 2018.
- Chen S, Qu M, Ding J, Zhang Y, Wang Y, Di Y. BaP-metals co-exposure induced tissue-specific antioxidant defense in marine mussels *Mytilus coruscus*. *Chemosphere*. 2018;205:286-96.
- Chen Y-F, Pandey S, Day CH, Chen Y-F, Jiang A-Z, Ho T-J, et al. Synergistic effect of HIF-1alpha and FoxO3a trigger cardiomyocyte apoptosis under hyperglycemic ischemia condition. *Journal of cellular physiology*. 2018;233(4):3660-71.
- Choi Y, Park K, Kim I, Kim SD. Combined toxic effect of airborne heavy metals on human lung cell line A549. *Environmental geochemistry and health*. 2018;40(1):271-82.
- Cosnier F, Nunge H, Bonfanti E, Grossmann S, Lambert-Xollin A-M, Muller S, et al. Toluene and methylethylketone: effect of combined exposure on their metabolism in rat. *Xenobiotica; the fate of foreign compounds in biological systems*. 2018;48(7):684-94.
- Dickel F, Munch D, Amdam GV, Mappes J, Freitak D. Increased survival of honeybees in the laboratory after simultaneous exposure to low doses of pesticides and bacteria. *PloS one*. 2018;13(1):e0191256.
- Erickson RJ, Mount DR, Highland TL, Hockett JR, Hoff DJ, Jenson CT, et al. The acute toxicity of major ion salts to *Ceriodaphnia dubia*. III. Mathematical models for mixture toxicity. *Environmental toxicology and chemistry*. 2018;37(1):247-59.
- Falone S, Santini S, Jr., Cordone V, Di Emidio G, Tatone C, Cacchio M, et al. Extremely Low-Frequency Magnetic Fields and Redox-Responsive Pathways Linked to Cancer Drug Resistance: Insights from Co-Exposure-Based In Vitro Studies. *Frontiers in public health*. 2018;6:33.
- Fornaroli R, Ippolito A, Tolkkinen MJ, Mykra H, Muotka T, Balistrieri LS, et al. Disentangling the effects of low pH and metal mixture toxicity on macroinvertebrate diversity. *Environmental pollution (Barking, Essex : 1987)*. 2018;235:889-98.
- Freire C, Amaya E, Gil F, Fernandez MF, Murcia M, Llop S, et al. Prenatal co-exposure to neurotoxic metals and neurodevelopment in preschool children: The Environment and Childhood (INMA) Project. *The Science of the total environment*. 2018;621:340-51.
- Gainer A, Cousins M, Hogan N, Siciliano SD. Petroleum Hydrocarbon Mixture Toxicity and a Trait Based Approach to Soil Invertebrate Species for Site Specific Risk Assessments. *Environmental toxicology and chemistry*. 2018.
- Gao H-T, Xu R, Cao W-X, Di Q-N, Li R-X, Lu L, et al. Combined effects of simultaneous exposure to six phthalates and emulsifier glycerol monosterate on male reproductive system in rats. *Toxicology and applied pharmacology*. 2018;341:87-97.
- Ghazanfar M, Shahid S, Qureshi IZ. Vitamin C attenuates biochemical and genotoxic damage in common carp (*Cyprinus carpio*) upon joint exposure to combined toxic doses of fipronil and buprofezin insecticides. *Aquatic toxicology (Amsterdam, Netherlands)*. 2018;196:43-52.
- Hong Q, Zhou S, Zhao H, Peng J, Li Y, Shang Y, et al. Allergenicity of recombinant *Humulus japonicus* pollen allergen 1 after combined exposure to ozone and nitrogen dioxide. *Environmental pollution (Barking, Essex : 1987)*. 2018;234:707-15.

Hopf NB, Spring P, Hirt-Burri N, Jimenez S, Sutter B, Vernez D, et al. Polycyclic aromatic hydrocarbons (PAHs) skin permeation rates change with simultaneous exposures to solar ultraviolet radiation (UV-S). *Toxicology letters*. 2018;287:122-30.

Imran M, Sergent O, Tete A, Gallais I, Chevanne M, Lagadic-Gossmann D, et al. Membrane Remodeling as a Key Player of the Hepatotoxicity Induced by Co-Exposure to Benzo a pyrene and Ethanol of Obese Zebrafish Larvae. *Biomolecules*. 2018;8(2).

Jhamtani RC, Shukla S, Sivaperumal P, Dahiya MS, Agarwal R. Impact of co-exposure of aldrin and titanium dioxide nanoparticles at biochemical and molecular levels in Zebrafish. *Environmental toxicology and pharmacology*. 2018;58:141-55.

Jia W, Wang C, Ma C, Wang J, Sun H. Element uptake and physiological responses of *Lactuca sativa* upon co-exposures to tourmaline and dissolved humic acids. *Environmental science and pollution research international*. 2018.

Kargar S, Khoei S, Khoei S, Shirvalilou S, Mahdavi SR. Evaluation of the combined effect of NIR laser and ionizing radiation on cellular damages induced by IUdR-loaded PLGA-coated Nano-graphene oxide. *Photodiagnosis and photodynamic therapy*. 2018;21:91-7.

Khan AM, Raina R, Dubey N, Verma PK. Effect of deltamethrin and fluoride co-exposure on the brain antioxidant status and cholinesterase activity in Wistar rats. *Drug and chemical toxicology*. 2018;41(2):123-7.

Kharlyngdoh JB, Pradhan A, Olsson P-E. Androgen receptor modulation following combination exposure to brominated flame-retardants. *Scientific reports*. 2018;8(1):4843.

Kim K, Jeon H-J, Choi S-D, Tsang DCW, Oleszczuk P, Ok YS, et al. Combined toxicity of endosulfan and phenanthrene mixtures and induced molecular changes in adult Zebrafish (*Danio rerio*). *Chemosphere*. 2018;194:30-41.

Konkel L. Assessing a Medley of Metals: Combined Exposures and Incident Coronary Heart Disease. *Environmental health perspectives*. 2018;126(3):034002.

Kurazumi T, Ogawa Y, Yanagida R, Morisaki H, Iwasaki K-I. Non-Invasive Intracranial Pressure Estimation During Combined Exposure to CO₂, and Head-Down Tilt. *Aerospace medicine and human performance*. 2018;89(4):365-70.

Lafi B, Chaabane M, Elwej A, Grati M, Jamoussi K, Mnif H, et al. Effects of co-exposure to imidacloprid and gibberellic acid on redox status, kidney variables and histopathology in adult rats. *Archives of physiology and biochemistry*. 2018;124(2):175-84.

Lai H, Liu Y, Zhou M, Shi T, Zhou Y, Weng S, et al. Combined effect of silica dust exposure and cigarette smoking on total and cause-specific mortality in iron miners: a cohort study. *Environmental health : a global access science source*. 2018;17(1):46.

Li H, Zhang J, You J. Diagnosis of complex mixture toxicity in sediments: Application of toxicity identification evaluation (TIE) and effect-directed analysis (EDA). *Environmental pollution (Barking, Essex : 1987)*. 2018;237:944-54.

Li Q-S, Cai H-W, Li G-X, Chen G-Y, Ma X-Y, He W-L. Degradation behavior of triclosan by co-exposure to chlorine dioxide and UV irradiation: influencing factors and toxicity changes. *Environmental science and pollution research international*. 2018;25(10):9391-401.

Liu J, Guo L, Zhang K, Song Q, Wei Q, Bian Q, et al. The probable roles of valsartan in alleviating chronic obstructive pulmonary disease following co-exposure to cold stress and fine particulate matter. *Environmental toxicology and pharmacology*. 2018;60:230-6.

- Liu Y, Guo R, Tang S, Zhu F, Zhang S, Yan Z, et al. Single and mixture toxicities of BDE-47, 6-OH-BDE-47 and 6-MeO-BDE-47 on the feeding activity of *Daphnia magna*: From behavior assessment to neurotoxicity. *Chemosphere*. 2018;195:542-50.
- Lourenco LM, Jiang Y, Drobnitzky N, Green M, Cahill F, Patel A, et al. PARP Inhibition Combined With Thoracic Irradiation Exacerbates Esophageal and Skin Toxicity in C57BL6 Mice. *International journal of radiation oncology, biology, physics*. 2018;100(3):767-75.
- Mager EM, Pasparakis C, Stieglitz JD, Hoening R, Morris JM, Benetti DD, et al. Combined effects of hypoxia or elevated temperature and Deepwater Horizon crude oil exposure on juvenile mahi-mahi swimming performance. *Marine environmental research*. 2018.
- Manesh RR, Grassi G, Bergami E, Marques-Santos LF, Faleri C, Liberatori G, et al. Co-exposure to titanium dioxide nanoparticles does not affect cadmium toxicity in radish seeds (*Raphanus sativus*). *Ecotoxicology and environmental safety*. 2018;148:359-66.
- Mao F, He Y, Gin KY-H. Evaluating the Joint Toxicity of Two Benzophenone-Type UV Filters on the Green Alga *Chlamydomonas reinhardtii* with Response Surface Methodology. *Toxics*. 2018;6(1).
- Martins M, Silva A, Costa MH, Miguel C, Costa PM. Co-exposure to environmental carcinogens in vivo induces neoplasia-related hallmarks in low-genotoxicity events, even after removal of insult. *Scientific reports*. 2018;8(1):3649.
- Maruoka Y, Nagaya T, Sato K, Ogata F, Okuyama S, Choyke PL, et al. Near Infrared Photoimmunotherapy with Combined Exposure of External and Interstitial Light Sources. *Molecular pharmaceutics*. 2018.
- Mecozzi M. Comment on the paper "Individual and combined toxic effect of nickel and chromium on biochemical constituents in *E. coli* using FTIR spectroscopy and principal component analysis" by Annika Durva Gupta and Karthikeyan Sivakumaran. *Ecotoxicology and environmental safety*. 2018;147:610-1.
- Morozeck M, Franqui LS, Mansano AS, Martinez DST, Fernandes MN. Interactions of oxidized multiwalled carbon nanotube with cadmium on zebrafish cell line: The influence of two co-exposure protocols on in vitro toxicity tests. *Aquatic toxicology (Amsterdam, Netherlands)*. 2018;200:136-47.
- Munoz-Rocha TV, Tamayo Y Ortiz M, Romero M, Pantic I, Schnaas L, Bellinger D, et al. Prenatal co-exposure to manganese and depression and 24-months neurodevelopment. *Neurotoxicology*. 2018;64:134-41.
- Oh KJ, Park JY, Lee J, Hong J-S, Romero R, Yoon BH. The combined exposure to intra-amniotic inflammation and neonatal respiratory distress syndrome increases the risk of intraventricular hemorrhage in preterm neonates. *Journal of perinatal medicine*. 2018;46(1):9-20.
- Pan S, Lin L, Zeng F, Zhang J, Dong G, Yang B, et al. Effects of lead, cadmium, arsenic, and mercury co-exposure on children's intelligence quotient in an industrialized area of southern China. *Environmental pollution (Barking, Essex : 1987)*. 2018;235:47-54.
- Perera FP, Wheelock K, Wang Y, Tang D, Margolis AE, Badia G, et al. Combined effects of prenatal exposure to polycyclic aromatic hydrocarbons and material hardship on child ADHD behavior problems. *Environmental research*. 2018;160:506-13.
- Qin L-T, Chen Y-H, Zhang X, Mo L-Y, Zeng H-H, Liang Y-P. QSAR prediction of additive and non-additive mixture toxicities of antibiotics and pesticide. *Chemosphere*. 2018;198:122-9.
- Queiros L, Vidal T, Nogueira AJA, Goncalves FJM, Pereira JL. Mixture toxicity assisting the design of eco-friendlier plant protection products: a case-study using a commercial herbicide combining nicosulfuron and terbuthylazine. *Scientific reports*. 2018;8(1):5547.

Rahman MS, Thomas P. Interactive effects of hypoxia and PCB co-exposure on expression of CYP1A and its potential regulators in Atlantic croaker liver. *Environmental toxicology*. 2018;33(4):411-21.

Raina P, Gilsing A, Freisling H, van den Heuvel E, Sohel N, Jenab M, et al. The Combined Effect of Cancer and Cardio-Metabolic Conditions on the Mortality Burden in Older Adults. *The journals of gerontology Series A, Biological sciences and medical sciences*. 2018.

Rodrigues ACM, Bordalo MD, Golovko O, Koba O, Barata C, Soares AMVM, et al. Combined effects of insecticide exposure and predation risk on freshwater detritivores. *Ecotoxicology (London, England)*. 2018.

Smith M-C, Madec S, Troadec S, Coton E, Hymery N. Effects of fusariotoxin co-exposure on THP-1 human immune cells. *Cell biology and toxicology*. 2018;34(3):191-205.

Smith M-C, Timmins-Schiffman E, Coton M, Coton E, Hymery N, Nunn BL, et al. Differential impacts of individual and combined exposures of deoxynivalenol and zearalenone on the HepaRG human hepatic cell proteome. *Journal of proteomics*. 2018;173:89-98.

Soussi A, Gargouri M, El Feki A. Effects of co-exposure to lead and zinc on redox status, kidney variables, and histopathology in adult albino rats. *Toxicology and industrial health*. 2018;748233718770293.

Suter MK, Karr CJ, John-Stewart GC, Gomez LA, Moraa H, Nyatika D, et al. Implications of Combined Exposure to Household Air Pollution and HIV on Neurocognition in Children. *International journal of environmental research and public health*. 2018;15(1).

Tam NT, Berg H, Van Cong N. Evaluation of the joint toxicity of chlorpyrifos ethyl and fenobucarb on climbing perch (*Anabas testudineus*) from rice fields in the Mekong Delta, Vietnam. *Environmental science and pollution research international*. 2018;25(14):13226-34.

Tomasek I, Horwell CJ, Bisig C, Damby DE, Comte P, Czerwinski J, et al. Respiratory hazard assessment of combined exposure to complete gasoline exhaust and respirable volcanic ash in a multicellular human lung model at the air-liquid interface. *Environmental pollution (Barking, Essex : 1987)*. 2018;238:977-87.

Uchendu C, Ambali SF, Ayo JO, Esievo KAN. Chronic co-exposure to chlorpyrifos and deltamethrin pesticides induces alterations in serum lipids and oxidative stress in Wistar rats: mitigating role of alpha-lipoic acid. *Environmental science and pollution research international*. 2018.

Veissi M, Jafarirad S, Ahangarpour A, Mohaghegh SM, Malehi AS. Co-exposure to endocrine disruptors: effect of bisphenol A and soy extract on glucose homeostasis and related metabolic disorders in male mice. *Endocrine regulations*. 2018;52(2):76-84.

Wang C, Liang C, Ma J, Manthari RK, Niu R, Wang J, et al. Co-exposure to fluoride and sulfur dioxide on histological alteration and DNA damage in rat brain. *Journal of biochemical and molecular toxicology*. 2018;32(2).

Wang D, Shi J, Xiong Y, Hu J, Lin Z, Qiu Y, et al. A QSAR-based mechanistic study on the combined toxicity of antibiotics and quorum sensing inhibitors against *Escherichia coli*. *Journal of hazardous materials*. 2018;341:438-47.

Wang D, Wu X, Lin Z, Ding Y. A comparative study on the binary and ternary mixture toxicity of antibiotics towards three bacteria based on QSAR investigation. *Environmental research*. 2018;162:127-34.

Wang F, Liu Q, Jin L, Hu S, Luo R, Han M, et al. Combination exposure of melamine and cyanuric acid is associated with polyuria and activation of NLRP3 inflammasome in rats. *American journal of physiology Renal physiology*. 2018.

- Wang F, Zhang H, Geng N, Ren X, Zhang B, Gong Y, et al. A metabolomics strategy to assess the combined toxicity of polycyclic aromatic hydrocarbons (PAHs) and short-chain chlorinated paraffins (SCCPs). *Environmental pollution (Barking, Essex : 1987)*. 2018;234:572-80.
- Wang L, Kang Y, Liang S, Chen D, Zhang Q, Zeng L, et al. Synergistic effect of co-exposure to cadmium (II) and 4-n-nonylphenol on growth inhibition and oxidative stress of *Chlorella sorokiniana*. *Ecotoxicology and environmental safety*. 2018;154:145-53.
- Wang L, Zheng M, Gao Y, Cui J. In vitro study on the joint hepatotoxicity upon combined exposure of cadmium and BDE-209. *Environmental toxicology and pharmacology*. 2018;57:62-9.
- Wang Y, Wu S, Chen J, Zhang C, Xu Z, Li G, et al. Single and joint toxicity assessment of four currently used pesticides to zebrafish (*Danio rerio*) using traditional and molecular endpoints. *Chemosphere*. 2018;192:14-23.
- Wong EM, Walby WF, Wilson DW, Tablin F, Schelegle ES. Ultrafine Particulate Matter Combined With Ozone Exacerbates Lung Injury in Mature Adult Rats With Cardiovascular Disease. *Toxicological sciences : an official journal of the Society of Toxicology*. 2018;163(1):140-51.
- Wu S, Lei L, Liu M, Song Y, Lu S, Li D, et al. Single and mixture toxicity of strobilurin and SDHI fungicides to *Xenopus tropicalis* embryos. *Ecotoxicology and environmental safety*. 2018;153:8-15.
- Wu W, Zhang K, Jiang S, Liu D, Zhou H, Zhong R, et al. Association of co-exposure to heavy metals with renal function in a hypertensive population. *Environment international*. 2018;112:198-206.
- Yang X, Feng L, Zhang Y, Hu H, Shi Y, Liang S, et al. Co-exposure of silica nanoparticles and methylmercury induced cardiac toxicity in vitro and in vivo. *The Science of the total environment*. 2018;631-632:811-21.
- Zhang C, Chen X, Tan L, Wang J. Combined toxicities of copper nanoparticles with carbon nanotubes on marine microalgae *Skeletonema costatum*. *Environmental science and pollution research international*. 2018;25(13):13127-33.
- Zhang Q, Lai W, Yin T, Zhang C, Yue C, Cheng J, et al. Investigation of the Viability of Cells upon Co-Exposure to Gold and Iron Oxide Nanoparticles. *Bioconjugate chemistry*. 2018.
- Zhang Y, Liu M, Liu J, Wang X, Wang C, Ai W, et al. Combined toxicity of triclosan, 2,4-dichlorophenol and 2,4,6-trichlorophenol to zebrafish (*Danio rerio*). *Environmental toxicology and pharmacology*. 2018;57:9-18.
- Abarikwu SO, Duru QC, Njoku R-CC, Amadi BA, Tamunoibuomie A, Keboh E. Effects of co-exposure to atrazine and ethanol on the oxidative damage of kidney and liver in Wistar rats. *Renal failure*. 2017;39(1):588-96.
- Adams VH, McAtee MJ, Johnson MS. Implementation of the basic hazard index screening for health risks associated with simultaneous exposure to multiple chemicals using a standardized target organ and systems framework. *Integrated environmental assessment and management*. 2017;13(5):852-60.
- Adedara IA, Abolaji AO, Awogbindin IO, Farombi EO. Suppression of the brain-pituitary-testicular axis function following acute arsenic and manganese co-exposure and withdrawal in rats. *Journal of trace elements in medicine and biology : organ of the Society for Minerals and Trace Elements (GMS)*. 2017;39:21-9.
- Alajlouni AM, Al-Malahmeh AJ, Wesseling S, Kalli M, Vervoort J, Rietjens IMCM. Risk assessment of combined exposure to alkenylbenzenes through consumption of plant food supplements containing parsley and dill. *Food additives & contaminants Part A, Chemistry, analysis, control, exposure & risk assessment*. 2017;34(12):2201-11.

Alassane-Kpembi I, Puel O, Pinton P, Cossalter A-M, Chou T-C, Oswald IP. Co-exposure to low doses of the food contaminants deoxynivalenol and nivalenol has a synergistic inflammatory effect on intestinal explants. *Archives of toxicology*. 2017;91(7):2677-87.

Alassane-Kpembi I, Schatzmayr G, Taranu I, Marin D, Puel O, Oswald IP. Mycotoxins co-contamination: Methodological aspects and biological relevance of combined toxicity studies. *Critical reviews in food science and nutrition*. 2017;57(16):3489-507.

Alloy M, Garner TR, Bridges K, Mansfield C, Carney M, Forth H, et al. Co-exposure to sunlight enhances the toxicity of naturally weathered Deepwater Horizon oil to early life stage red drum (*Sciaenops ocellatus*) and speckled seatrout (*Cynoscion nebulosus*). *Environmental toxicology and chemistry*. 2017;36(3):780-5.

Azevedo SL, Holz T, Rodrigues J, Monteiro T, Costa FM, Soares AMVM, et al. A mixture toxicity approach to predict the toxicity of Ag decorated ZnO nanomaterials. *The Science of the total environment*. 2017;579:337-44.

Balinang JM, Masvekar RR, Hauser KF, Knapp PE. Productive infection of human neural progenitor cells by R5 tropic HIV-1: opiate co-exposure heightens infectivity and functional vulnerability. *AIDS (London, England)*. 2017;31(6):753-64.

Bhari N, Sahni K, Dev T, Sharma VK. Symmetrical drug-related intertriginous and flexural erythema (Baboon syndrome) induced by simultaneous exposure to oral and topical terbinafine. *International journal of dermatology*. 2017;56(8):e168-e70.

Bialk-Bielinska A, Caban M, Pieczynska A, Stepnowski P, Stolte S. Mixture toxicity of six sulfonamides and their two transformation products to green algae *Scenedesmus vacuolatus* and duckweed *Lemna minor*. *Chemosphere*. 2017;173:542-50.

Calafat AM, Ye X, Valentin-Blasini L, Li Z, Mortensen ME, Wong L-Y. Co-exposure to non-persistent organic chemicals among American pre-school aged children: A pilot study. *International journal of hygiene and environmental health*. 2017;220(2 Pt A):55-63.

Cang T, Dai D, Yang G, Yu Y, Lv L, Cai L, et al. Combined toxicity of imidacloprid and three insecticides to the earthworm, *Eisenia fetida* (Annelida, Oligochaeta). *Environmental science and pollution research international*. 2017;24(9):8722-30.

Chen C, Wang D, Wang H, Lin Z, Fang Z. A SAR-based mechanistic study on the combined toxicities of sulfonamides and quorum sensing inhibitors on *Escherichia coli*. *SAR and QSAR in environmental research*. 2017;28(7):595-608.

Cowell WJ, Wright RJ. Sex-Specific Effects of Combined Exposure to Chemical and Non-chemical Stressors on Neuroendocrine Development: a Review of Recent Findings and Putative Mechanisms. *Current environmental health reports*. 2017;4(4):415-25.

Dance C, Botias C, Goulson D. The combined effects of a monotonous diet and exposure to thiamethoxam on the performance of bumblebee micro-colonies. *Ecotoxicology and environmental safety*. 2017;139:194-201.

Dawson DA, Poch G. Evaluation of consistency for multiple experiments of a single combination in the time-dependence mixture toxicity assay. *Toxicology mechanisms and methods*. 2017;27(9):707-16.

de Almeida ACG, Petersen K, Langford K, Thomas KV, Tollefsen KE. Mixture toxicity of five biocides with dissimilar modes of action on the growth and photosystem II efficiency of *Chlamydomonas reinhardtii*. *Journal of toxicology and environmental health Part A*. 2017;80(16-18):971-86.

de Perre C, Murphy TM, Lydy MJ. Mixture toxicity of phostebupirim and cyfluthrin: Species-specific responses. *Environmental toxicology and chemistry*. 2017;36(7):1947-54.

de Souza ES, Texeira RA, da Costa HSC, Oliveira FJ, Melo LCA, do Carmo Freitas Faial K, et al. Assessment of risk to human health from simultaneous exposure to multiple contaminants in an artisanal gold mine in Serra Pelada, Para, Brazil. *The Science of the total environment*. 2017;576:683-95.

DeCourten BM, Brander SM. Combined effects of increased temperature and endocrine disrupting pollutants on sex determination, survival, and development across generations. *Scientific reports*. 2017;7(1):9310.

Dekker N, Bouma A, Daemen I, Vernooij H, van Leengoed L, Wagenaar JA, et al. Effect of Simultaneous Exposure of Pigs to *Streptococcus suis* Serotypes 2 and 9 on Their Colonization and Transmission, and on Mortality. *Pathogens (Basel, Switzerland)*. 2017;6(4).

Deng R, Lin D, Zhu L, Majumdar S, White JC, Gardea-Torresdey JL, et al. Nanoparticle interactions with co-existing contaminants: joint toxicity, bioaccumulation and risk. *Nanotoxicology*. 2017;11(5):591-612.

Deruytter D, Baert JM, Nevejan N, De Schamphelaere KAC, Janssen CR. Mixture toxicity in the marine environment: Model development and evidence for synergism at environmental concentrations. *Environmental toxicology and chemistry*. 2017;36(12):3471-9.

Ding K, Lu L, Wang J, Wang J, Zhou M, Zheng C, et al. In vitro and in silico investigations of the binary-mixture toxicity of phthalate esters and cadmium (II) to *Vibrio qinghaiensis* sp.-Q67. *The Science of the total environment*. 2017;580:1078-84.

Ding L, Zang L, Zhang Y, Zhang Y, Wang X, Ai W, et al. Joint toxicity of fluoroquinolone and tetracycline antibiotics to zebrafish (*Danio rerio*) based on biochemical biomarkers and histopathological observation. *The Journal of toxicological sciences*. 2017;42(3):267-80.

Ding T, Zhang J, Ni W, Li J. Combined toxicity of arsenite and dimethylarsenic acid on the freshwater diatom *Nitzschia palea*. *Ecotoxicology (London, England)*. 2017;26(2):202-10.

Drummond D, Baravalle-Einaudi M, Lezmi G, Vibhushan S, Franco-Montoya M-L, Hadchouel A, et al. Combined Effects of in Utero and Adolescent Tobacco Smoke Exposure on Lung Function in C57Bl/6J Mice. *Environmental health perspectives*. 2017;125(3):392-9.

El-Nekeety AA, El-Kady AA, Abdel-Wahhab KG, Hassan NS, Abdel-Wahhab MA. Reduction of individual or combined toxicity of fumonisin B1 and zearalenone via dietary inclusion of organo-modified nano-montmorillonite in rats. *Environmental science and pollution research international*. 2017;24(25):20770-83.

Fan G, Zhou F, Feng C. Toxic effects of combined exposure to four heavy metals at low doses. *Journal of hazardous materials*. 2017;323(Pt B):737-8.

Feng L, Yang X, Asweto CO, Wu J, Zhang Y, Hu H, et al. Low-dose combined exposure of nanoparticles and heavy metal compared with PM2.5 in human myocardial AC16 cells. *Environmental science and pollution research international*. 2017.

Frizzi F, Bartalesi V, Santini G. Combined effects of temperature and interspecific competition on the mortality of the invasive garden ant, *Lasius neglectus*: A laboratory study. *Journal of thermal biology*. 2017;65:76-81.

Gaudriault P, Mazaud-Guittot S, Lavoue V, Coiffec I, Lesne L, Dejuq-Rainsford N, et al. Endocrine Disruption in Human Fetal Testis Explants by Individual and Combined Exposures to Selected Pharmaceuticals, Pesticides, and Environmental Pollutants. *Environmental health perspectives*. 2017;125(8):087004.

Giorgi G, Pirazzini C, Bacalini MG, Giuliani C, Garagnani P, Capri M, et al. Assessing the combined effect of extremely low-frequency magnetic field exposure and oxidative stress on LINE-1 promoter methylation in human neural cells. *Radiation and environmental biophysics*. 2017;56(2):193-200.

Godfrey A, Abdel-Moneim A, Sepulveda MS. Acute mixture toxicity of halogenated chemicals and their next generation counterparts on zebrafish embryos. *Chemosphere*. 2017;181:710-2.

Gohari FA, Saranjam B, Asgari M, Omidi L, Ekrami H, Moussavi-Najarkola SA. An Experimental Study of the Effects of Combined Exposure to Microwave and Heat on Gene Expression and Sperm Parameters in Mice. *Journal of human reproductive sciences*. 2017;10(2):128-34.

Guzman-Rangel G, Versieren L, Qiu H, Smolders E. Additive toxicity of zinc and arsenate on barley (*Hordeum vulgare*) root elongation. *Environmental toxicology and chemistry*. 2017;36(6):1556-62.

Hass U, Christiansen S, Axelstad M, Scholze M, Boberg J. Combined exposure to low doses of pesticides causes decreased birth weights in rats. *Reproductive toxicology (Elmsford, NY)*. 2017;72:97-105.

Hou L, Zhang C, Wang K, Liu X, Wang H, Che Y, et al. Paraquat and maneb co-exposure induces noradrenergic locus coeruleus neurodegeneration through NADPH oxidase-mediated microglial activation. *Toxicology*. 2017;380:1-10.

Huybrechts KF, Bateman BT, Desai RJ, Hernandez-Diaz S, Rough K, Mogun H, et al. Risk of neonatal drug withdrawal after intrauterine co-exposure to opioids and psychotropic medications: cohort study. *BMJ (Clinical research ed)*. 2017;358:j3326.

Kang L, Jia L, Han P, Zhang W, Ma Y, Fu L, et al. Combined Effect of Obesity and Mobility Limitation with Incidence of Type 2 Diabetes and Mortality in Chinese Elderly. *Rejuvenation research*. 2017;20(5):375-82.

Kim D, Chae Y, An Y-J. Mixture Toxicity of Nickel and Microplastics with Different Functional Groups on *Daphnia magna*. *Environmental science & technology*. 2017;51(21):12852-8.

Lebrun JD, Uher E, Fechner LC. Behavioural and biochemical responses to metals tested alone or in mixture (Cd-Cu-Ni-Pb-Zn) in *Gammarus fossarum*: From a multi-biomarker approach to modelling metal mixture toxicity. *Aquatic toxicology (Amsterdam, Netherlands)*. 2017;193:160-7.

Leung PTY, Yi AX, Ip JCH, Mak SST, Leung KMY. Photosynthetic and transcriptional responses of the marine diatom *Thalassiosira pseudonana* to the combined effect of temperature stress and copper exposure. *Marine pollution bulletin*. 2017;124(2):938-45.

Li B, Xu L, Tao F, Xie K, Wu Z, Li Y, et al. Simultaneous exposure to FcgammaR and FcalphaR on monocytes and macrophages enhances antitumor activity in vivo. *Oncotarget*. 2017;8(24):39356-66.

Li T, Liu S-S, Qu R, Liu H-L. Global concentration additivity and prediction of mixture toxicities, taking nitrobenzene derivatives as an example. *Ecotoxicology and environmental safety*. 2017;144:475-81.

Li X, Yin P, Zhao L. Effects of individual and combined toxicity of bisphenol A, dibutyl phthalate and cadmium on oxidative stress and genotoxicity in HepG 2cells. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2017;105:73-81.

Li Z, Liu M, Chen LK, Li GZ. Combined Toxicity of an Environmental Remediation Residue, Magnetite Fe₃O₄ Nanoparticles/Cr(VI) Adduct. *Biomedical and environmental sciences : BES*. 2017;30(11):783-91.

Lin H, Guo Y, Kowal P, Airhihenbuwa CO, Di Q, Zheng Y, et al. Exposure to air pollution and tobacco smoking and their combined effects on depression in six low- and middle-income countries. *The British journal of psychiatry : the journal of mental science*. 2017;211(3):157-62.

Liu Y, Li Y, Li L, Zhu Y, Liu J, Li G, et al. Attenuation of Sulfur Dioxide Damage to Wheat Seedlings by Co-exposure to Nitric Oxide. *Bulletin of environmental contamination and toxicology*. 2017;99(1):146-51.

Lu C-F, Li L-Z, Zhou W, Zhao J, Wang Y-M, Peng S-Q. Silica nanoparticles and lead acetate co-exposure triggered synergistic cytotoxicity in A549 cells through potentiation of mitochondria-dependent apoptosis induction. *Environmental toxicology and pharmacology*. 2017;52:114-20.

Ma J, Huang C, Ma K, Wu Y-P, Li B-X, Sun Y. Effect of Wnt1 and Wnt5a on the development of dopaminergic neurons, and toxicity induced by combined exposure to paraquat and maneb during gestation and lactation. *Molecular medicine reports*. 2017.

Main BJ, Rodgers KJ. Assessing the Combined Toxicity of BMAA and Its Isomers 2,4-DAB and AEG In Vitro Using Human Neuroblastoma Cells. *Neurotoxicity research*. 2017.

Miner NB, O'Callaghan JP, Phillips TJ, Janowsky A. The combined effects of 3,4-methylenedioxymethamphetamine (MDMA) and selected substituted methcathinones on measures of neurotoxicity. *Neurotoxicology and teratology*. 2017;61:74-81.

Minigalieva I, Bushueva T, Frohlich E, Meindl C, Ohlinger K, Panov V, et al. Are in vivo and invitro assessments of comparative and combined toxicity of the same metallic nanoparticles compatible, or contradictory, or both? A juxtaposition of data obtained in respective experiments with NiO and Mn3O4 nanoparticles. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2017;109(Pt 1):393-404.

Mu J, Chernick M, Dong W, Di Giulio RT, Hinton DE. Early life co-exposures to a real-world PAH mixture and hypoxia result in later life and next generation consequences in medaka (*Oryzias latipes*). *Aquatic toxicology (Amsterdam, Netherlands)*. 2017;190:162-73.

Muturi EJ, Ramirez JL, Doll KM, Bowman MJ. Combined Toxicity of Three Essential Oils Against *Aedes aegypti* (Diptera: Culicidae) Larvae. *Journal of medical entomology*. 2017;54(6):1684-91.

Nagai T. Predicting herbicide mixture effects on multiple algal species using mixture toxicity models. *Environmental toxicology and chemistry*. 2017;36(10):2624-30.

Nam T-H, Kim L, Jeon H-J, Kim K, Ok Y-S, Choi S-D, et al. Biomarkers indicate mixture toxicities of fluorene and phenanthrene with endosulfan toward earthworm (*Eisenia fetida*). *Environmental geochemistry and health*. 2017;39(2):307-17.

Ndjaboue R, Brisson C, Talbot D, Vezina M. Combined exposure to adverse psychosocial work factors and medically certified absence for mental health problems: A 5-year prospective study. *Journal of psychosomatic research*. 2017;92:9-15.

Neale PA, Leusch FDL, Escher BI. Applying mixture toxicity modelling to predict bacterial bioluminescence inhibition by non-specifically acting pharmaceuticals and specifically acting antibiotics. *Chemosphere*. 2017;173:387-94.

Nuttall JR, Kucera HR, Supasai S, Gaikwad NW, Oteiza PI. Combined Effects of Gestational Phthalate Exposure and Zinc Deficiency on Steroid Metabolism and Growth. *Toxicological sciences : an official journal of the Society of Toxicology*. 2017;156(2):469-79.

Nys C, Van Regenmortel T, Janssen CR, Blust R, Smolders E, De Schamphelaere KAC. Comparison of chronic mixture toxicity of nickel-zinc-copper and nickel-zinc-copper-cadmium mixtures between *Ceriodaphnia dubia* and *Pseudokirchneriella subcapitata*. *Environmental toxicology and chemistry*. 2017;36(4):1056-66.

Nys C, Versieren L, Cordery KI, Blust R, Smolders E, De Schamphelaere KAC. Systematic Evaluation of Chronic Metal-Mixture Toxicity to Three Species and Implications for Risk Assessment. *Environmental science & technology*. 2017;51(8):4615-23.

Oladipo OO, Ayo JO, Ambali SF, Mohammed B, Aluwong T. Dyslipidemia induced by chronic low dose co-exposure to lead, cadmium and manganese in rats: the role of oxidative stress. *Environmental toxicology and pharmacology*. 2017;53:199-205.

Olatunji LA, Olaniyi KS, Usman TO, Abolarinwa BA, Achile CJ, Kim I-K. Combined oral contraceptive and nitric oxide synthesis inhibition synergistically causes cardiac hypertrophy and exacerbates insulin resistance in female rats. *Environmental toxicology and pharmacology*. 2017;52:54-61.

Otani H, Kaya M, Tamaki A, Watson P. Separate and combined effects of exposure to heat stress and mental fatigue on endurance exercise capacity in the heat. *European journal of applied physiology*. 2017;117(1):119-29.

Pandey SP, Mohanty B. Disruption of the hypothalamic-pituitary-thyroid axis on co-exposures to dithiocarbamate and neonicotinoid pesticides: Study in a wildlife bird, *Amandava amandava*. *Neurotoxicology*. 2017;60:16-22.

Pant R, Jangra A, Kwatra M, Singh T, Kushwah P, Bezbaruah BK, et al. Cognitive deficits induced by combined exposure of stress and alcohol mediated through oxidative stress-PARP pathway in the hippocampus. *Neuroscience letters*. 2017;653:208-14.

Park C-B, Jang J, Kim S, Kim YJ. Single- and mixture toxicity of three organic UV-filters, ethylhexyl methoxycinnamate, octocrylene, and avobenzone on *Daphnia magna*. *Ecotoxicology and environmental safety*. 2017;137:57-63.

Parveen M, Asaeda T, Rashid MH. Biochemical adaptations of four submerged macrophytes under combined exposure to hypoxia and hydrogen sulphide. *PloS one*. 2017;12(8):e0182691.

Pasparakis C, Sweet LE, Stieglitz JD, Benetti D, Casente CT, Roberts AP, et al. Combined effects of oil exposure, temperature and ultraviolet radiation on buoyancy and oxygen consumption of embryonic mahi-mahi, *Coryphaena hippurus*. *Aquatic toxicology (Amsterdam, Netherlands)*. 2017;191:113-21.

Puckowski A, Stolte S, Wagil M, Markiewicz M, Lukaszewicz P, Stepnowski P, et al. Mixture toxicity of flubendazole and fenbendazole to *Daphnia magna*. *International journal of hygiene and environmental health*. 2017;220(3):575-82.

Qian J, Ding Q, Guo A, Zhang D, Wang K. Alteration in successional trajectories of bacterioplankton communities in response to co-exposure of cadmium and phenanthrene in coastal water microcosms. *Environmental pollution (Barking, Essex : 1987)*. 2017;221:480-90.

Qu D, Gu Y, Feng L, Han J. High Content Analysis technology for evaluating the joint toxicity of sunset yellow and sodium sulfite in vitro. *Food chemistry*. 2017;233:135-43.

Raffler N, Rissler J, Ellegast R, Schikowsky C, Kraus T, Ochsmann E. Combined exposures of whole-body vibration and awkward posture: a cross sectional investigation among occupational drivers by means of simultaneous field measurements. *Ergonomics*. 2017;60(11):1564-75.

Rahman MM, Ukiana J, Uson-Lopez R, Sikder MT, Saito T, Kurasaki M. Cytotoxic effects of cadmium and zinc co-exposure in PC12 cells and the underlying mechanism. *Chemico-biological interactions*. 2017;269:41-9.

Rocco ML, Balzamino BO, Esposito G, Petrella C, Aloe L, Micera A. NGF/anti-VEGF combined exposure protects RCS retinal cells and photoreceptors that underwent a local worsening of inflammation. *Graefe's archive for clinical and experimental ophthalmology = Albrecht von Graefes Archiv fur klinische und experimentelle Ophthalmologie*. 2017;255(3):567-74.

Rothenberg SE, Jackson BP, Carly McCalla G, Donohue A, Emmons AM. Co-exposure to methylmercury and inorganic arsenic in baby rice cereals and rice-containing teething biscuits. *Environmental research*. 2017;159:639-47.

Ruckert C, Weger-Lucarelli J, Garcia-Luna SM, Young MC, Byas AD, Murrieta RA, et al. Impact of simultaneous exposure to arboviruses on infection and transmission by *Aedes aegypti* mosquitoes. *Nature communications*. 2017;8:15412.

- Saddiq B, Ejaz M, Shad SA, Aslam M. Assessing the combined toxicity of conventional and newer insecticides on the cotton mealybug *Phenacoccus solenopsis*. *Ecotoxicology* (London, England). 2017;26(9):1240-9.
- Sanches ALM, Vieira BH, Reghini MV, Moreira RA, Freitas EC, Espindola ELG, et al. Single and mixture toxicity of abamectin and difenoconazole to adult zebrafish (*Danio rerio*). *Chemosphere*. 2017;188:582-7.
- Schaal N, Slagley J, Zreiqat M, Paschold H. Effects of combined exposure to metals, solvents, and noise on permanent threshold shifts. *American journal of industrial medicine*. 2017;60(3):227-38.
- Schneider S, Fussell KC, Melching-Kollmuss S, Buesen R, Groters S, Strauss V, et al. Investigations on the dose-response relationship of combined exposure to low doses of three anti-androgens in Wistar rats. *Archives of toxicology*. 2017.
- Shanmugarajan S, Zhang Y, Moreno-Villanueva M, Clanton R, Rohde LH, Ramesh GT, et al. Combined Effects of Simulated Microgravity and Radiation Exposure on Osteoclast Cell Fusion. *International journal of molecular sciences*. 2017;18(11).
- Shukla S, Jhamtani RC, Dahiya MS, Agarwal R. Oxidative injury caused by individual and combined exposure of neonicotinoid, organophosphate and herbicide in zebrafish. *Toxicology reports*. 2017;4:240-4.
- Smith M-C, Madec S, Pawtowski A, Coton E, Hymery N. Individual and combined toxicological effects of deoxynivalenol and zearalenone on human hepatocytes in in vitro chronic exposure conditions. *Toxicology letters*. 2017;280:238-46.
- Soleimani E, Goudarzi I, Abrari K, Lashkarbolouki T. Maternal administration of melatonin prevents spatial learning and memory deficits induced by developmental ethanol and lead co-exposure. *Physiology & behavior*. 2017;173:200-8.
- Song J, Kang J, Lin B, Li J, Zhu Y, Du J, et al. Mediating Role of TRPV1 Ion Channels in the Co-exposure to PM2.5 and Formaldehyde of Balb/c Mice Asthma Model. *Scientific reports*. 2017;7(1):11926.
- Su H, Li Z, Fiati Kenston SS, Shi H, Wang Y, Song X, et al. Joint Toxicity of Different Heavy Metal Mixtures after a Short-Term Oral Repeated-Administration in Rats. *International journal of environmental research and public health*. 2017;14(10).
- Tanaka Y, Tada M. Generalized concentration addition approach for predicting mixture toxicity. *Environmental toxicology and chemistry*. 2017;36(1):265-75.
- Tariba B, Zivkovic T, Gajski G, Geric M, Gluscic V, Garaj-Vrhovac V, et al. In vitro effects of simultaneous exposure to platinum and cadmium on the activity of antioxidant enzymes and DNA damage and potential protective effects of selenium and zinc. *Drug and chemical toxicology*. 2017;40(2):228-34.
- Tsai T-L, Kuo C-C, Pan W-H, Chung Y-T, Chen C-Y, Wu T-N, et al. The decline in kidney function with chromium exposure is exacerbated with co-exposure to lead and cadmium. *Kidney international*. 2017;92(3):710-20.
- Venet T, Carreres-Pons M, Chalansonnet M, Thomas A, Merlen L, Nunge H, et al. Continuous exposure to low-frequency noise and carbon disulfide: Combined effects on hearing. *Neurotoxicology*. 2017;62:151-61.
- Versieren L, Evers S, AbdElgawad H, Asard H, Smolders E. Mixture toxicity of copper, cadmium, and zinc to barley seedlings is not explained by antioxidant and oxidative stress biomarkers. *Environmental toxicology and chemistry*. 2017;36(1):220-30.

Villarini M, Gambelunghe A, Giustarini D, Ambrosini MV, Fatigoni C, Rossi R, et al. No evidence of DNA damage by co-exposure to extremely low frequency magnetic fields and aluminum on neuroblastoma cell lines. *Mutation research*. 2017;823:11-21.

Villeneuve DL, Jensen KM, Cavallin JE, Durhan EJ, Garcia-Reyero N, Kahl MD, et al. Effects of the antimicrobial contaminant triclocarban, and co-exposure with the androgen 17beta-trenbolone, on reproductive function and ovarian transcriptome of the fathead minnow (*Pimephales promelas*). *Environmental toxicology and chemistry*. 2017;36(1):231-42.

Wang D, Wang Z, Zhou M, Li W, He M, Zhang X, et al. The combined effect of cigarette smoking and occupational noise exposure on hearing loss: evidence from the Dongfeng-Tongji Cohort Study. *Scientific reports*. 2017;7(1):11142.

Wang L, Dong H, Song G, Zhang R, Pan J, Han J. TXNDC5 synergizes with HSC70 to exacerbate the inflammatory phenotype of synovial fibroblasts in rheumatoid arthritis through NF-kappaB signaling. *Cellular & molecular immunology*. 2017.

Wang S, Wang Z, Chen M, Fang H, Wang D. Co-exposure of Freshwater Microalgae to Tetrabromobisphenol A and Sulfadiazine: Oxidative Stress Biomarker Responses and Joint Toxicity Prediction. *Bulletin of environmental contamination and toxicology*. 2017;99(4):438-44.

Wang Y, Ezemaduka AN, Li Z, Chen Z, Song C. Joint Toxicity of Arsenic, Copper and Glyphosate on Behavior, Reproduction and Heat Shock Protein Response in *Caenorhabditis elegans*. *Bulletin of environmental contamination and toxicology*. 2017;98(4):465-71.

Wang Z, Zhang J, Li E, Zhang L, Wang X, Song L. Combined toxic effects and mechanisms of microcystin-LR and copper on *Vallisneria Natans* (Lour.) Hara seedlings. *Journal of hazardous materials*. 2017;328:108-16.

Wei C, Chen M, You H, Qiu F, Wen H, Yuan J, et al. Formaldehyde and co-exposure with benzene induce compensation of bone marrow and hematopoietic stem/progenitor cells in BALB/c mice during post-exposure period. *Toxicology and applied pharmacology*. 2017;324:36-44.

Xia S, Zhu P, Pi F, Zhang Y, Li Y, Wang J, et al. Development of a simple and convenient cell-based electrochemical biosensor for evaluating the individual and combined toxicity of DON, ZEN, and AFB1. *Biosensors & bioelectronics*. 2017;97:345-51.

Xie J, Yang D, Sun X, Cao R, Chen L, Wang Q, et al. Individual and Combined Toxicities of Benzo a pyrene and 2,2',4,4'-Tetrabromodiphenyl Ether on Early Life Stages of the Pacific Oyster, *Crassostrea gigas*. *Bulletin of environmental contamination and toxicology*. 2017;99(5):582-8.

Xing Y, Luo J, Zhang J, Li B, Gong X, Liu Z, et al. Effects of single and combined exposures to copper and benzotriazole on *Eisenia fetida*. *Chemosphere*. 2017;186:108-15.

Xu M-Y, Wang P, Sun Y-J, Yang L, Wu Y-J. Joint toxicity of chlorpyrifos and cadmium on the oxidative stress and mitochondrial damage in neuronal cells. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2017;103:246-52.

Yang G, Chen C, Wang Y, Peng Q, Zhao H, Guo D, et al. Mixture toxicity of four commonly used pesticides at different effect levels to the epigeic earthworm, *Eisenia fetida*. *Ecotoxicology and environmental safety*. 2017;142:29-39.

Yang X, Liu W, Lin H, Zeng H, Zhang R, Pu C, et al. Interaction Effects of AFB1 and MC-LR Co-exposure with Polymorphism of Metabolic Genes on Liver Damage: focusing on SLCO1B1 and GSTP1. *Scientific reports*. 2017;7(1):16164.

Yi X, Bao VWW, Leung KMY. Binary mixture toxicities of triphenyltin with tributyltin or copper to five marine organisms: Implications on environmental risk assessment. *Marine pollution bulletin*. 2017;124(2):839-46.

Yu HY, Park Y-S, Son Y-J. Combined effect of left ventricular ejection fraction and post-cardiac depressive symptoms on major adverse cardiac events after successful primary percutaneous coronary intervention: a 12-month follow-up. *European journal of cardiovascular nursing : journal of the Working Group on Cardiovascular Nursing of the European Society of Cardiology*. 2017;16(1):37-45.

Yu J, Xu EG, Ren Y, Jin S, Zhang T, Liu J, et al. Mixture Toxicity of Bensulfuron-Methyl and Acetochlor to Red Swamp Crayfish (*Procambarus clarkii*): Behavioral, Morphological and Histological Effects. *International journal of environmental research and public health*. 2017;14(12).

Yu K, Doherty AH, Genik PC, Gookin SE, Roteliuk DM, Wojda SJ, et al. Mimicking the effects of spaceflight on bone: Combined effects of disuse and chronic low-dose rate radiation exposure on bone mass in mice. *Life sciences in space research*. 2017;15:62-8.

Zarei F, Rezazadeh Azari M, Salehpour S, Khodakarim S, Omidi L, Tavakol E. Respiratory Effects of Simultaneous Exposure to Respirable Crystalline Silica Dust, Formaldehyde, and Triethylamine of a Group of Foundry Workers. *Journal of research in health sciences*. 2017;17(1):e00371.

Zhang J, Liu L, Ren L, Feng W, Lv P, Wu W, et al. The single and joint toxicity effects of chlorpyrifos and beta-cypermethrin in zebrafish (*Danio rerio*) early life stages. *Journal of hazardous materials*. 2017;334:121-31.

Zhou H, George S, Li C, Gurusamy S, Sun X, Gong Z, et al. Combined toxicity of prevalent mycotoxins studied in fish cell line and zebrafish larvae revealed that type of interactions is dose-dependent. *Aquatic toxicology (Amsterdam, Netherlands)*. 2017;193:60-71.

Zhou Q, Gu Y, Yue X, Mao G, Wang Y, Su H, et al. Combined toxicity and underlying mechanisms of a mixture of eight heavy metals. *Molecular medicine reports*. 2017;15(2):859-66.

Zhou Y, Zhang W, Guo Z, Zhang L. Effects of salinity and copper co-exposure on copper bioaccumulation in marine rabbitfish *Siganus oramin*. *Chemosphere*. 2017;168:491-500.

Aarhus L, Tambs K, Nafstad P, Bjorgan E, Engdahl B. Childhood sensorineural hearing loss: effects of combined exposure with aging or noise exposure later in life. *European archives of oto-rhino-laryngology : official journal of the European Federation of Oto-Rhino-Laryngological Societies (EUFOS) : affiliated with the German Society for Oto-Rhino-Laryngology - Head and Neck Surgery*. 2016;273(5):1099-105.

Abarikwu SO, Duru QC, Chinonso OV, Njoku RC. Antioxidant enzymes activity, lipid peroxidation, oxidative damage in the testis and epididymis, and steroidogenesis in rats after co-exposure to atrazine and ethanol. *Andrologia*. 2016;48(5):548-57.

Akinola OB, Biliaminu SA, Adedeji OG, Oluwaseun BS, Olawoyin OM, Adelabu TA. Combined effects of chronic hyperglycaemia and oral aluminium intoxication on testicular tissue and some male reproductive parameters in Wistar rats. *Andrologia*. 2016;48(7):779-86.

Akinyemi JO, Adedini SA, Wandera SO, Odimegwu CO. Independent and combined effects of maternal smoking and solid fuel on infant and child mortality in sub-Saharan Africa. *Tropical medicine & international health : TM & IH*. 2016;21(12):1572-82.

Azevedo SL, Ribeiro F, Jurkschat K, Soares AMVM, Loureiro S. Co-exposure of ZnO nanoparticles and UV radiation to *Daphnia magna* and *Danio rerio*: Combined effects rather than protection. *Environmental toxicology and chemistry*. 2016;35(2):458-67.

Braicu C, Selicean S, Cojocneanu-Petric R, Lajos R, Balacescu O, Taranu I, et al. Evaluation of cellular and molecular impact of zearalenone and *Escherichia coli* co-exposure on IPEC-1 cells using microarray technology. *BMC genomics*. 2016;17:576.

Cao C, Wang Q, Jiao F, Zhu G. Impact of co-exposure with butachlor and triadimefon on thyroid endocrine system in larval zebrafish. *Experimental and toxicologic pathology : official journal of the Gesellschaft fur Toxikologische Pathologie*. 2016;68(8):463-9.

- Chandra A, Lahiri A, Senapati S, Basu B, Ghosh S, Mukhopadhyay I, et al. Increased Risk of Psoriasis due to combined effect of HLA-Cw6 and LCE3 risk alleles in Indian population. *Scientific reports*. 2016;6:24059.
- Chang CM, Ou YH, Liu TC, Lu SY, Wang MK. A quantitative structure-activity relationship approach for assessing toxicity of mixture of organic compounds. *SAR and QSAR in environmental research*. 2016;27(6):441-53.
- Chang H-W, Tang J-Y, Yen C-Y, Chang H-S, Huang H-W, Chung Y-A, et al. Synergistic anti-oral cancer effects of UVC and methanolic extracts of *Cryptocarya concinna* roots via apoptosis, oxidative stress and DNA damage. *International journal of radiation biology*. 2016;92(5):263-72.
- Chatio S, Aborigo R, Adongo PB, Anyorigiya T, Dalinjong PA, Akweongo P, et al. Factors influencing adverse events reporting within the health care system: the case of artemisinin-based combination treatments in northern Ghana. *Malaria journal*. 2016;15:125.
- Chatterjee S, Kapoor A, Akiyama JA, Auer DR, Lee D, Gabriel S, et al. Enhancer Variants Synergistically Drive Dysfunction of a Gene Regulatory Network In Hirschsprung Disease. *Cell*. 2016;167(2):355-68.e10.
- Chatterjee S, Rhee Y-H, Ahn J-C. Sulforaphene-Carboplatin Combination Synergistically Enhances Apoptosis by Disruption of Mitochondrial Membrane Potential and Cell Cycle Arrest in Human Non-Small Cell Lung Carcinoma. *Journal of medicinal food*. 2016;19(9):860-9.
- Chattopadhyay A, Pinkaew D, Doan HQ, Jacob RB, Verma SK, Friedman H, et al. Fortilin potentiates the peroxidase activity of Peroxiredoxin-1 and protects against alcohol-induced liver damage in mice. *Scientific reports*. 2016;6:18701.
- Che WW, Frey HC, Lau AKH. Sequential Measurement of Intermodal Variability in Public Transportation PM2.5 and CO Exposure Concentrations. *Environmental science & technology*. 2016;50(16):8760-9.
- Chen J, van Dongen MA, Merzel RL, Dougherty CA, Orr BG, Kanduluru AK, et al. Substrate-Triggered Exosite Binding: Synergistic Dendrimer/Folic Acid Action for Achieving Specific, Tight-Binding to Folate Binding Protein. *Biomacromolecules*. 2016;17(3):922-7.
- Chen L, Jiang X, Feng H, Shi H, Sun L, Tao W, et al. Simultaneous exposure to estrogen and androgen resulted in feminization and endocrine disruption. *The Journal of endocrinology*. 2016;228(3):205-18.
- Costa L, Mohmood I, Trindade T, Anjum NA, Duarte AC, Pereira E. Phagocytic cell responses to silica-coated dithiocarbamate-functionalized iron oxide nanoparticles and mercury co-exposures in *Anguilla anguilla* L. *Environmental science and pollution research international*. 2016;23(12):12272-86.
- Cui X, Wan B, Guo L-H, Yang Y, Ren X. Insight into the Mechanisms of Combined Toxicity of Single-Walled Carbon Nanotubes and Nickel Ions in Macrophages: Role of P2X7 Receptor. *Environmental science & technology*. 2016;50(22):12473-83.
- Delijewski M, Wrzesniok D, Beberok A, Rok J, Otreba M, Buszman E. The effect of simultaneous exposure of HEMn-DP and HEMn-LP melanocytes to nicotine and UV-radiation on the cell viability and melanogenesis. *Environmental research*. 2016;151:44-9.
- Dickel H, Blome O, Dickel B, Bruckner T, Stockfleth E, Soemantri SP. Occupational syncarcinogenesis in the skin - combined effects of two carcinogens from the German occupational disease list. *Journal der Deutschen Dermatologischen Gesellschaft = Journal of the German Society of Dermatology : JDDG*. 2016;14(12):1284-96.
- Duan J, Hu H, Li Q, Jiang L, Zou Y, Wang Y, et al. Combined toxicity of silica nanoparticles and methylmercury on cardiovascular system in zebrafish (*Danio rerio*) embryos. *Environmental toxicology and pharmacology*. 2016;44:120-7.

Duan J, Yu Y, Li Y, Wang Y, Sun Z. Inflammatory response and blood hypercoagulable state induced by low level co-exposure with silica nanoparticles and benzo a pyrene in zebrafish (*Danio rerio*) embryos. *Chemosphere*. 2016;151:152-62.

Dzhambov AM, Dimitrova DD. Heart disease attributed to occupational noise, vibration and other co-exposure: Self-reported population-based survey among Bulgarian workers. *Medycyna pracy*. 2016;67(4):435-45.

Ertl NG, O'Connor WA, Brooks P, Keats M, Elizur A. Combined exposure to pyrene and fluoranthene and their molecular effects on the Sydney rock oyster, *Saccostrea glomerata*. *Aquatic toxicology* (Amsterdam, Netherlands). 2016;177:136-45.

Fadhlaoui M, Couture P. Combined effects of temperature and metal exposure on the fatty acid composition of cell membranes, antioxidant enzyme activities and lipid peroxidation in yellow perch (*Perca flavescens*). *Aquatic toxicology* (Amsterdam, Netherlands). 2016;180:45-55.

Fang S, Wang D, Zhang X, Long X, Qin M, Lin Z, et al. Similarities and differences in combined toxicity of sulfonamides and other antibiotics towards bacteria for environmental risk assessment. *Environmental monitoring and assessment*. 2016;188(7):429.

Gao G, Qian J, Fang D, Yu Y, Zhi J. Development of a mediated whole cell-based electrochemical biosensor for joint toxicity assessment of multi-pollutants using a mixed microbial consortium. *Analytica chimica acta*. 2016;924:21-8.

Geiger E, Hornek-Gausterer R, Sacan MT. Single and mixture toxicity of pharmaceuticals and chlorophenols to freshwater algae *Chlorella vulgaris*. *Ecotoxicology and environmental safety*. 2016;129:189-98.

Gharred T, Jebali J, Belgacem M, Mannai R, Achour S. Assessment of the individual and mixture toxicity of cadmium, copper and oxytetracycline, on the embryo-larval development of the sea urchin *Paracentrotus lividus*. *Environmental science and pollution research international*. 2016;23(18):18064-72.

Ghorbel I, Maktouf S, Fendri N, Jamoussi K, Ellouze Chaabouni S, Boudawara T, et al. Co-exposure to aluminum and acrylamide disturbs expression of metallothionein, proinflammatory cytokines and induces genotoxicity: Biochemical and histopathological changes in the kidney of adult rats. *Environmental toxicology*. 2016;31(9):1044-58.

Gill KK, Dumka VK. Antioxidant status in oral subchronic toxicity of fipronil and fluoride co-exposure in buffalo calves. *Toxicology and industrial health*. 2016;32(2):251-9.

Govarts E, Remy S, Bruckers L, Den Hond E, Sioen I, Nelen V, et al. Combined Effects of Prenatal Exposures to Environmental Chemicals on Birth Weight. *International journal of environmental research and public health*. 2016;13(5).

Guan R, Wang T, Chen J, Luo W, Liu M. The activation of microglia caused by lead and manganese co-exposure induces activation of astrocytes and decrease of glutamine synthetase activity. *Xi bao yu fen zi mian yi xue za zhi = Chinese journal of cellular and molecular immunology*. 2016;32(3):313-8.

Gupta AD, Karthikeyan S. Individual and combined toxic effect of nickel and chromium on biochemical constituents in *E. coli* using FTIR spectroscopy and Principle component analysis. *Ecotoxicology and environmental safety*. 2016;130:289-94.

Hallett KC, Atfield A, Comber S, Hutchinson TH. Developmental toxicity of metaldehyde in the embryos of *Lymnaea stagnalis* (Gastropoda: Pulmonata) co-exposed to the synergist piperonyl butoxide. *The Science of the total environment*. 2016;543(Pt A):37-43.

Hedgpeth BM, Griffitt RJ. Simultaneous exposure to chronic hypoxia and dissolved polycyclic aromatic hydrocarbons results in reduced egg production and larval survival in the sheepshead minnow (*Cyprinodon variegatus*). *Environmental toxicology and chemistry*. 2016;35(3):645-51.

Heinemann SD, Posimo JM, Mason DM, Hutchison DF, Leak RK. Synergistic stress exacerbation in hippocampal neurons: Evidence favoring the dual-hit hypothesis of neurodegeneration. *Hippocampus*. 2016;26(8):980-94.

Hochmuth JD, Janssen CR, De Schamphelaere KAC. Temperature and food concentration have limited influence on the mixture toxicity of copper and *Microcystis aeruginosa* to *Daphnia magna*. *Environmental toxicology and chemistry*. 2016;35(3):742-9.

Huang B, Li D, Yang Y. Joint Toxicity of Two Phthalates with Waterborne Copper to *Daphnia magna* and *Photobacterium phosphoreum*. *Bulletin of environmental contamination and toxicology*. 2016;97(3):380-6.

Iwasaki Y, Gauthier P. Concentration addition and response addition to analyze mixture toxicity: Is it worth testing? *Environmental toxicology and chemistry*. 2016;35(3):526-7.

Ji J, Zhu P, Pi F, Sun C, Jiang H, Sun J, et al. GC-TOF/MS-based metabolomic strategy for combined toxicity effects of deoxynivalenol and zearalenone on murine macrophage ANA-1 cells. *Toxicol : official journal of the International Society on Toxinology*. 2016;120:175-84.

Jiang X, Chen H-Q, Cui Z-H, Yin L, Zhang W-L, Liu W-B, et al. Low-dose and combined effects of oral exposure to bisphenol A and diethylstilbestrol on the male reproductive system in adult Sprague-Dawley rats. *Environmental toxicology and pharmacology*. 2016;43:94-102.

Jimeno-Romero A, Oron M, Cajaraville MP, Soto M, Marigomez I. Nanoparticle size and combined toxicity of TiO₂ and DSLS (surfactant) contribute to lysosomal responses in digestive cells of mussels exposed to TiO₂ nanoparticles. *Nanotoxicology*. 2016;10(8):1168-76.

Jocsak G, Kiss DS, Toth I, Goszleth G, Bartha T, Frenyo LV, et al. Comparison of Individual and Combined Effects of Four Endocrine Disruptors on Estrogen Receptor Beta Transcription in Cerebellar Cell Culture: The Modulatory Role of Estradiol and Triiodo-Thyronine. *International journal of environmental research and public health*. 2016;13(6).

Katsnelson BA, Panov VG, Varaksin AN, Minigalieva IA, Privalova LI, Sutunkova MP. Changes in the Dose-Response Relationship of One Toxicant Under Simultaneous Exposure to Another Toxicant. *Dose-response : a publication of International Hormesis Society*. 2016;14(4):1559325816672935.

Kim K-W, Won YL, Park DJ, Kim YS, Jin ES, Lee SK. Combined Toxic Effects of Polar and Nonpolar Chemicals on Human Hepatocytes (HepG2) Cells by Quantitative Property-Activity Relationship Modeling. *Toxicological research*. 2016;32(4):337-43.

Kim NH, Kim TJ, Kim NH, Choi KM, Baik SH, Choi DS, et al. Relative and combined effects of socioeconomic status and diabetes on mortality: A nationwide cohort study. *Medicine*. 2016;95(30):e4403.

Kreitinger C, Gutierrez H, Hamidovic A, Schmitt C, Sarangarm P, Rayburn WF, et al. The effect of prenatal alcohol co-exposure on neonatal abstinence syndrome in infants born to mothers in opioid maintenance treatment. *The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*. 2016;29(5):783-8.

Ku T, Ji X, Zhang Y, Li G, Sang N. PM_{2.5}, SO₂ and NO₂ co-exposure impairs neurobehavior and induces mitochondrial injuries in the mouse brain. *Chemosphere*. 2016;163:27-34.

Kwon DY, Kim H-M, Kim E, Lim Y-M, Kim P, Choi K, et al. Acute pulmonary toxicity and inflammation induced by combined exposure to didecyltrimethylammonium chloride and ethylene glycol in rats. *The Journal of toxicological sciences*. 2016;41(1):17-24.

Lance E, Desprat J, Holbech BF, Gerard C, Bormans M, Lawton LA, et al. Accumulation and detoxication responses of the gastropod *Lymnaea stagnalis* to single and combined exposures to natural

(cyanobacteria) and anthropogenic (the herbicide RoundUp() Flash) stressors. *Aquatic toxicology* (Amsterdam, Netherlands). 2016;177:116-24.

Lanier C, Bernard F, Dumez S, Leclercq J, Lemiere S, Vandebulcke F, et al. Combined effect of Cd and Pb spiked field soils on bioaccumulation, DNA damage, and peroxidase activities in *Trifolium repens*. *Environmental science and pollution research international*. 2016;23(2):1755-67.

Lee I-C, Ko J-W, Park S-H, Shin I-S, Moon C, Kim S-H, et al. Melamine and cyanuric acid co-exposure causes renal dysfunction and structural damage via MAPKs and mitochondrial signaling. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2016;96:254-62.

Lee S, Ishibashi S, Shimomura Y, Katsuura T. Effect of simultaneous exposure to extremely short pulses of blue and green light on human pupillary constriction. *Journal of physiological anthropology*. 2016;35(1):20.

Lin X, Gu Y, Zhou Q, Mao G, Zou B, Zhao J. Combined toxicity of heavy metal mixtures in liver cells. *Journal of applied toxicology : JAT*. 2016;36(9):1163-72.

Lionetti V. Simultaneous exposure to nitric oxide inhibition and angiotensin II overload: is it a murine model of mitochondrial dysfunction in nonischemic heart failure? *American journal of physiology Heart and circulatory physiology*. 2016;310(11):H1385-7.

Liu J, Lincoln T, An J, Gao Z, Dang Z, Pan W, et al. The Joint Toxicity of Different Temperature Coefficient Insecticides on *Apolygus lucorum* (Hemiptera: Miridae). *Journal of economic entomology*. 2016;109(4):1846-52.

Liu J, Qu R, Yan L, Wang L, Wang Z. Evaluation of single and joint toxicity of perfluorooctane sulfonate and zinc to *Limnodrilus hoffmeisteri*: Acute toxicity, bioaccumulation and oxidative stress. *Journal of hazardous materials*. 2016;301:342-9.

Liu Y, Baas J, Peijnenburg WJGM, Vijver MG. Evaluating the Combined Toxicity of Cu and ZnO Nanoparticles: Utility of the Concept of Additivity and a Nested Experimental Design. *Environmental science & technology*. 2016;50(10):5328-37.

Long X, Wang D, Lin Z, Qin M, Song C, Liu Y. The mixture toxicity of environmental contaminants containing sulfonamides and other antibiotics in *Escherichia coli*: Differences in both the special target proteins of individual chemicals and their effective combined concentration. *Chemosphere*. 2016;158:193-203.

Lopes S, Pinheiro C, Soares AMVM, Loureiro S. Joint toxicity prediction of nanoparticles and ionic counterparts: Simulating toxicity under a fate scenario. *Journal of hazardous materials*. 2016;320:1-9.

Luzio A, Monteiro SM, Rocha E, Fontainhas-Fernandes AA, Coimbra AM. Development and recovery of histopathological alterations in the gonads of zebrafish (*Danio rerio*) after single and combined exposure to endocrine disruptors (17 α -ethinylestradiol and fadrozole). *Aquatic toxicology* (Amsterdam, Netherlands). 2016;175:90-105.

Maazouzi C, Coureau C, Piscart C, Saplairoles M, Baran N, Marmonier P. Individual and joint toxicity of the herbicide S-metolachlor and a metabolite, deethylatrazine on aquatic crustaceans: Difference between ecological groups. *Chemosphere*. 2016;165:118-25.

Malekpouri P, Peyghan R, Mahboobi-Soofiani N, Mohammadian B. Metabolic capacities of common carp (*Cyprinus carpio*) following combined exposures to copper and environmental hypoxia. *Ecotoxicology and environmental safety*. 2016;127:1-11.

Mansouri B, Maleki A, Johari SA, Shahmoradi B, Mohammadi E, Shahsavari S, et al. Copper Bioaccumulation and Depuration in Common Carp (*Cyprinus carpio*) Following Co-exposure to TiO₂ and CuO Nanoparticles. *Archives of environmental contamination and toxicology*. 2016;71(4):541-52.

- Margerit A, Gomez E, Gilbin R. Dynamic energy-based modeling of uranium and cadmium joint toxicity to *Caenorhabditis elegans*. *Chemosphere*. 2016;146:405-12.
- Markert A, Baumann R, Gerhards B, Gube M, Kossack V, Kraus T, et al. Single and Combined Exposure to Zinc- and Copper-Containing Welding Fumes Lead to Asymptomatic Systemic Inflammation. *Journal of occupational and environmental medicine*. 2016;58(2):127-32.
- Matsumoto AK, Higashi CM, Bonifacio KL, Barbosa MA, Klein RM, Filgueiras GB, et al. Co-exposure to fish oil or folic acid does not reverse effects in the progeny induced by maternal exposure to fluoxetine. *Neurotoxicology and teratology*. 2016;56:1-8.
- Mesa-Gresa P, Ramos-Campos M, Redolat R. Corticosterone levels and behavioral changes induced by simultaneous exposure to chronic social stress and enriched environments in NMRI male mice. *Physiology & behavior*. 2016;158:6-17.
- Meyer LA, Johnson MG, Cullen DM, Vivanco JF, Blank RD, Ploeg H-L, et al. Combined exposure to big endothelin-1 and mechanical loading in bovine sternal cores promotes osteogenesis. *Bone*. 2016;85:115-22.
- Muniz JA, Gomez G, Gonzalez B, Rivero-Echeto MC, Cadet JL, Garcia-Rill E, et al. Combined Effects of Simultaneous Exposure to Caffeine and Cocaine in the Mouse Striatum. *Neurotoxicity research*. 2016;29(4):525-38.
- Nagai T, De Schamphelaere KAC. The effect of binary mixtures of zinc, copper, cadmium, and nickel on the growth of the freshwater diatom *Navicula pelliculosa* and comparison with mixture toxicity model predictions. *Environmental toxicology and chemistry*. 2016;35(11):2765-73.
- Nascimento FJA, Svendsen C, Bradshaw C. Joint Toxicity of Cadmium and Ionizing Radiation on Zooplankton Carbon Incorporation, Growth and Mobility. *Environmental science & technology*. 2016;50(3):1527-35.
- Ortega Moreno L, Lamacchia O, Fontana A, Copetti M, Salvemini L, De Bonis C, et al. The combined effect of adiponectin and resistin on all-cause mortality in patients with type 2 diabetes: Evidence of synergism with abdominal adiposity. *Atherosclerosis*. 2016;250:23-9.
- Pani G, Verslegers M, Quintens R, Samari N, de Saint-Georges L, van Oostveldt P, et al. Combined Exposure to Simulated Microgravity and Acute or Chronic Radiation Reduces Neuronal Network Integrity and Survival. *PloS one*. 2016;11(5):e0155260.
- Pires A, Almeida A, Calisto V, Schneider RJ, Esteves VI, Wrona FJ, et al. *Hediste diversicolor* as bioindicator of pharmaceutical pollution: Results from single and combined exposure to carbamazepine and caffeine. *Comparative biochemistry and physiology Toxicology & pharmacology : CBP*. 2016;188:30-8.
- Qu R, Liu J, Wang L, Wang Z. The toxic effect and bioaccumulation in aquatic oligochaete *Limnodrilus hoffmeisteri* after combined exposure to cadmium and perfluorooctane sulfonate at different pH values. *Chemosphere*. 2016;152:496-502.
- Rahimpour F, Rafiei Manesh E, Jarahi L, Eghbali S. Assessing the Effect of Simultaneous Exposure to Noise and Cigarette Smoke on Workers' Blood Pressure. *Iranian journal of otorhinolaryngology*. 2016;28(89):413-9.
- Rose S, Altenburger R, Sturm A. Mixture toxicity effects of sea louse control agents in *Daphnia magna*. *Chemosphere*. 2016;144:599-606.
- Sadakane K, Ichinose T, Nishikawa M, Takano H, Shibamoto T. Co-exposure to zymosan A and heat-inactivated Asian sand dust exacerbates ovalbumin-induced murine lung eosinophilia. *Allergy, asthma, and clinical immunology : official journal of the Canadian Society of Allergy and Clinical Immunology*. 2016;12:48.

Salvadego D, Keramidias ME, Brocca L, Domenis R, Mavelli I, Rittweger J, et al. Separate and combined effects of a 10-d exposure to hypoxia and inactivity on oxidative function in vivo and mitochondrial respiration ex vivo in humans. *Journal of applied physiology* (Bethesda, Md : 1985). 2016;121(1):154-63.

Schlottz N, Roulin A, Ebert D, Martin-Creuzburg D. Combined effects of dietary polyunsaturated fatty acids and parasite exposure on eicosanoid-related gene expression in an invertebrate model. *Comparative biochemistry and physiology Part A, Molecular & integrative physiology*. 2016;201:115-23.

Schmidt S, Busch W, Altenburger R, Kuster E. Mixture toxicity of water contaminants-effect analysis using the zebrafish embryo assay (*Danio rerio*). *Chemosphere*. 2016;152:503-12.

Sehra S, Jaggi S, Sehra D, Aggarwal R, Saraswat V, Juneja D. Management of Sitagliptin and Metformin Combination Toxic Overdose. *The Journal of the Association of Physicians of India*. 2016;64(11):80-1.

Shin J, Cho KH, Choi Y, Lee SG, Park EC, Jang SI. Combined effect of individual and neighborhood socioeconomic status on mortality in patients with newly diagnosed dyslipidemia: A nationwide Korean cohort study from 2002 to 2013. *Nutrition, metabolism, and cardiovascular diseases : NMCD*. 2016;26(3):207-15.

Silva CS, Chang C-W, Williams D, Porter-Gill P, Gamboa da Costa G, Camacho L. Effects of a 28-day dietary co-exposure to melamine and cyanuric acid on the levels of serum microRNAs in male and female Fisher 344 rats. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2016;98(Pt A):11-6.

Sinha AK, Kapotwe M, Dabi SB, Montes CdS, Shrivastava J, Blust R, et al. Differential modulation of ammonia excretion, Rhesus glycoproteins and ion-regulation in common carp (*Cyprinus carpio*) following individual and combined exposure to waterborne copper and ammonia. *Aquatic toxicology (Amsterdam, Netherlands)*. 2016;170:129-41.

Smith M-C, Madec S, Coton E, Hymery N. Natural Co-Occurrence of Mycotoxins in Foods and Feeds and Their in vitro Combined Toxicological Effects. *Toxins*. 2016;8(4):94.

Soleimani E, Goudarzi I, Abrari K, Lashkarbolouki T. The combined effects of developmental lead and ethanol exposure on hippocampus dependent spatial learning and memory in rats: Role of oxidative stress. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2016;96:263-72.

Solomon KR, Wilks MF, Bachman A, Boobis A, Moretto A, Pastoor TP, et al. Problem formulation for risk assessment of combined exposures to chemicals and other stressors in humans. *Critical reviews in toxicology*. 2016;46(10):835-44.

Soubere Mahamoud Y, Aite M, Martin C, Zhadobov M, Sauleau R, Le Drean Y, et al. Additive Effects of Millimeter Waves and 2-Deoxyglucose Co-Exposure on the Human Keratinocyte Transcriptome. *PloS one*. 2016;11(8):e0160810.

Stojic SS, Stanisic N, Stojic A, Sostaric A. Single and combined effects of air pollutants on circulatory and respiratory system-related mortality in Belgrade, Serbia. *Journal of toxicology and environmental health Part A*. 2016;79(1):17-27.

Sui Y, Kong H, Huang X, Dupont S, Hu M, Storch D, et al. Combined effects of short-term exposure to elevated CO₂ and decreased O₂ on the physiology and energy budget of the thick shell mussel *Mytilus coruscus*. *Chemosphere*. 2016;155:207-16.

Toman R, Hluchy S, Cabaj M, Massanyi P, Roychoudhury S, Tunegova M. Effect of separate and combined exposure of selenium and diazinon on rat sperm motility by computer assisted semen analysis. *Journal of trace elements in medicine and biology : organ of the Society for Minerals and Trace Elements (GMS)*. 2016;38:144-9.

Tomasek I, Horwell CJ, Damby DE, Barosova H, Geers C, Petri-Fink A, et al. Combined exposure of diesel exhaust particles and respirable Soufriere Hills volcanic ash causes a (pro-)inflammatory response in an in vitro multicellular epithelial tissue barrier model. *Particle and fibre toxicology*. 2016;13(1):67.

Tomaszewska E, Dobrowolski P, Winiarska-Mieczan A, Kwiecien M, Tomczyk A, Muszynski S, et al. Alteration in bone geometric and mechanical properties, histomorphometrical parameters of trabecular bone, articular cartilage, and growth plate in adolescent rats after chronic co-exposure to cadmium and lead in the case of supplementation with green, black, red and white tea. *Environmental toxicology and pharmacology*. 2016;46:36-44.

Tregub PP, Kulikov VP, Motin YG, Nagibaeva ME, Zabrodina AS. Stress of the Endoplasmic Reticulum of Neurons in Stroke Can Be Maximally Limited by Combined Exposure to Hypercapnia and Hypoxia. *Bulletin of experimental biology and medicine*. 2016;161(4):472-5.

Tregub PP, Malinovskaya NA, Kulikov VP, Salmina AB, Nagibaeva ME, Zabrodina AS, et al. Inhibition of Apoptosis is a Potential Way to Improving Ischemic Brain Tolerance in Combined Exposure to Hypercapnia and Hypoxia. *Bulletin of experimental biology and medicine*. 2016;161(5):666-9.

Tufi S, Wassenaar PNH, Osorio V, de Boer J, Leonards PEG, Lamoree MH. Pesticide Mixture Toxicity in Surface Water Extracts in Snails (*Lymnaea stagnalis*) by an in Vitro Acetylcholinesterase Inhibition Assay and Metabolomics. *Environmental science & technology*. 2016;50(7):3937-44.

Velez C, Teixeira M, Wrona FJ, Soares AMVM, Figueira E, Freitas R. Clam *Ruditapes philippinarum* recovery from short-term exposure to the combined effect of salinity shifts and Arsenic contamination. *Aquatic toxicology (Amsterdam, Netherlands)*. 2016;173:154-64.

Verschaeve L, Wambacq S, Anthonissen R, Maes A. Co-exposure of ELF-magnetic fields and chemical mutagens: An investigation of genotoxicity with the SOS-based VITOTOX test in *Salmonella typhimurium*. *Mutation research Genetic toxicology and environmental mutagenesis*. 2016;795:31-5.

Versieren L, Evers S, De Schamphelaere K, Blust R, Smolders E. Mixture toxicity and interactions of copper, nickel, cadmium, and zinc to barley at low effect levels: Something from nothing? *Environmental toxicology and chemistry*. 2016;35(10):2483-92.

Wang D, Lin Z, Ding X, Hu J, Liu Y. The Comparison of the Combined Toxicity between Gram-negative and Gram-positive Bacteria: a Case Study of Antibiotics and Quorum-sensing Inhibitors. *Molecular informatics*. 2016;35(2):54-61.

Wang D, Zhang Q, Zheng Y, Lin D, Yu Y. Estimating the combined toxicity of flufenacet and imazaquin to sorghum with pore water herbicide concentration. *Journal of environmental sciences (China)*. 2016;41:154-61.

Wang G, Gu S, Chen J, Wu X, Yu J. Assessment of health and economic effects by PM2.5 pollution in Beijing: a combined exposure-response and computable general equilibrium analysis. *Environmental technology*. 2016;37(24):3131-8.

Wang T, Wang D, Lin Z, An Q, Yin C, Huang Q. Prediction of mixture toxicity from the hormesis of a single chemical: A case study of combinations of antibiotics and quorum-sensing inhibitors with gram-negative bacteria. *Chemosphere*. 2016;150:159-67.

Wang Y, An X, Shen W, Chen L, Jiang J, Wang Q, et al. Individual and combined toxic effects of herbicide atrazine and three insecticides on the earthworm, *Eisenia fetida*. *Ecotoxicology (London, England)*. 2016;25(5):991-9.

Wen H, Yuan L, Wei C, Zhao Y, Qian Y, Ma P, et al. Effects of combined exposure to formaldehyde and benzene on immune cells in the blood and spleen in Balb/c mice. *Environmental toxicology and pharmacology*. 2016;45:265-73.

Wen Y, Zhang L, Chen Z, Sheng X, Qiu J, Xu D. Co-exposure of silver nanoparticles and chiral herbicide imazethapyr to *Arabidopsis thaliana*: Enantioselective effects. *Chemosphere*. 2016;145:207-14.

Wu J, Shi Y, Asweto CO, Feng L, Yang X, Zhang Y, et al. Co-exposure to amorphous silica nanoparticles and benzo a pyrene at low level in human bronchial epithelial BEAS-2B cells. *Environmental science and pollution research international*. 2016;23(22):23134-44.

Xu DM, Rao GW. Joint effect of co-exposure of Cu and chlorpyrifos on the toxicity of earthworm. *Ying yong sheng tai xue bao = The journal of applied ecology*. 2016;27(9):3029-34.

Yan L, Feng M, Liu J, Wang L, Wang Z. Antioxidant defenses and histological changes in *Carassius auratus* after combined exposure to zinc and three multi-walled carbon nanotubes. *Ecotoxicology and environmental safety*. 2016;125:61-71.

Zhang X, Hirota JA, Yang C, Carlsten C. Effect of GST variants on lung function following diesel exhaust and allergen co-exposure in a controlled human crossover study. *Free radical biology & medicine*. 2016;96:385-91.

Zhang Y, Ma J, Shi L, Cao D, Quan X. Joint toxicity of cadmium and SDBS on *Daphnia magna* and *Danio rerio*. *Ecotoxicology (London, England)*. 2016;25(10):1703-11.

Zhao J, Zhao Y, Liu B, Zhong K, Yao H, Lin K. Effect of metal accumulation-associated oxidative stress on the combined toxicity of quantum dots with Cu(2+) to *Bacillus subtilis*. *Environmental toxicology and pharmacology*. 2016;44:69-74.

Zhou F, Feng C, Fan G. Combined exposure of low dose lead, cadmium, arsenic, and mercury in mice. *Chemosphere*. 2016;165:564-5.

Zhu B, Wang Q, Shi X, Guo Y, Xu T, Zhou B. Effect of combined exposure to lead and decabromodiphenyl ether on neurodevelopment of zebrafish larvae. *Chemosphere*. 2016;144:1646-54.

Agrawal S, Bhatnagar P, Flora SJS. Changes in tissue oxidative stress, brain biogenic amines and acetylcholinesterase following co-exposure to lead, arsenic and mercury in rats. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2015;86:208-16.

Andersen ZJ, de Nazelle A, Mendez MA, Garcia-Aymerich J, Hertel O, Tjønneland A, et al. A study of the combined effects of physical activity and air pollution on mortality in elderly urban residents: the Danish Diet, Cancer, and Health Cohort. *Environmental health perspectives*. 2015;123(6):557-63.

Arain MB, Kazi TG, Baig JA, Afridi HI, Sarajuddin, Brehman KD, et al. Co-exposure of arsenic and cadmium through drinking water and tobacco smoking: risk assessment on kidney dysfunction. *Environmental science and pollution research international*. 2015;22(1):350-7.

Arambourou H, Stoks R. Combined effects of larval exposure to a heat wave and chlorpyrifos in northern and southern populations of the damselfly *Ischnura elegans*. *Chemosphere*. 2015;128:148-54.

Balistreri LS, Mebane CA, Schmidt TS, Keller WB. Expanding metal mixture toxicity models to natural stream and lake invertebrate communities. *Environmental toxicology and chemistry*. 2015;34(4):761-76.

Bastias-Candia S, Di Benedetto M, D'Addario C, Candeletti S, Romualdi P. Combined exposure to agriculture pesticides, paraquat and maneb, induces alterations in the N/OFQ-NOPr and PDYN/KOPr systems in rats: Relevance to sporadic Parkinson's disease. *Environmental toxicology*. 2015;30(6):656-63.

Beier EE, Inzana JA, Sheu T-J, Shu L, Puzas JE, Mooney RA. Effects of Combined Exposure to Lead and High-Fat Diet on Bone Quality in Juvenile Male Mice. *Environmental health perspectives*. 2015;123(10):935-43.

Bhattacharyya S, Feferman L, Unterman T, Tobacman JK. Exposure to common food additive carrageenan alone leads to fasting hyperglycemia and in combination with high fat diet exacerbates

glucose intolerance and hyperlipidemia without effect on weight. *Journal of diabetes research*. 2015;2015:513429.

Bu-Olayan AH, Thomas BV. Combined toxicity of mercury and plastic wastes to crustacean and gastropod inhabiting the waters in Kuwait. *Journal of environmental biology*. 2015;36(6):1291-6.

Burks TN, Marx R, Powell L, Rucker J, Bedja D, Heacock E, et al. Combined effects of aging and inflammation on renin-angiotensin system mediate mitochondrial dysfunction and phenotypic changes in cardiomyopathies. *Oncotarget*. 2015;6(14):11979-93.

Carbajo JB, Perdigon-Melon JA, Petre AL, Rosal R, Leton P, Garcia-Calvo E. Personal care product preservatives: risk assessment and mixture toxicities with an industrial wastewater. *Water research*. 2015;72:174-85.

Chen C-H, Huang K-Y, Wang J-Y, Huang H-B, Chou P, Lee C-C. Combined effect of individual and neighbourhood socioeconomic status on mortality of rheumatoid arthritis patients under universal health care coverage system. *Family practice*. 2015;32(1):41-8.

Chen F, Yao Q, Zhou X. The Influence of Suspended Solids on the Combined Toxicity of Galaxolide and Lead to *Daphnia magna*. *Bulletin of environmental contamination and toxicology*. 2015;95(1):73-9.

Chen X, Li H, You J. Joint toxicity of sediment-associated permethrin and cadmium to *Chironomus dilutus*: The role of bioavailability and enzymatic activities. *Environmental pollution (Barking, Essex : 1987)*. 2015;207:138-44.

Chen X, Zhou H, Li X, Wang Z, Zhu G, Jin T. Effects of lead and cadmium co-exposure on hemoglobin in a Chinese population. *Environmental toxicology and pharmacology*. 2015;39(2):758-63.

Contardo-Jara V, Kuehn S, Pflugmacher S. Single and combined exposure to MC-LR and BMAA confirm suitability of *Aegagropilina linnaei* for use in green liver systems()-A case study with cyanobacterial toxins. *Aquatic toxicology (Amsterdam, Netherlands)*. 2015;165:101-8.

Davis M, Li J, Knight E, Eldridge SR, Daniels KK, Bushel PR. Toxicogenomics profiling of bone marrow from rats treated with topotecan in combination with oxaliplatin: a mechanistic strategy to inform combination toxicity. *Frontiers in genetics*. 2015;6:14.

De Ruyck K, De Boevre M, Huybrechts I, De Saeger S. Dietary mycotoxins, co-exposure, and carcinogenesis in humans: Short review. *Mutation research Reviews in mutation research*. 2015;766:32-41.

Dever SM, Rodriguez M, Lapierre J, Costin BN, El-Hage N. Differing roles of autophagy in HIV-associated neurocognitive impairment and encephalitis with implications for morphine co-exposure. *Frontiers in microbiology*. 2015;6:653.

Farraj AK, Walsh L, Haykal-Coates N, Malik F, McGee J, Winsett D, et al. Cardiac effects of seasonal ambient particulate matter and ozone co-exposure in rats. *Particle and fibre toxicology*. 2015;12:12.

Feng M, He Q, Meng L, Zhang X, Sun P, Wang Z. Evaluation of single and joint toxicity of perfluorooctane sulfonate, perfluorooctanoic acid, and copper to *Carassius auratus* using oxidative stress biomarkers. *Aquatic toxicology (Amsterdam, Netherlands)*. 2015;161:108-16.

Gatidou G, Stasinakis AS, Iatrou EI. Assessing single and joint toxicity of three phenylurea herbicides using *Lemna minor* and *Vibrio fischeri* bioassays. *Chemosphere*. 2015;119 Suppl:S69-74.

Gauthier PT, Norwood WP, Prepas EE, Pyle GG. Metal-Polycyclic Aromatic Hydrocarbon Mixture Toxicity in *Hyalella azteca*. 1. Response Surfaces and Isoboles To Measure Non-additive Mixture Toxicity and Ecological Risk. *Environmental science & technology*. 2015;49(19):11772-9.

- Gauthier PT, Norwood WP, Prepas EE, Pyle GG. Metal-Polycyclic Aromatic Hydrocarbon Mixture Toxicity in *Hyalella azteca*. 2. Metal Accumulation and Oxidative Stress as Interactive Co-toxic Mechanisms. *Environmental science & technology*. 2015;49(19):11780-8.
- Ghorbel I, Elwej A, Jamoussi K, Boudawara T, Kamoun NG, Zeghal N. Potential protective effects of extra virgin olive oil on the hepatotoxicity induced by co-exposure of adult rats to acrylamide and aluminum. *Food & function*. 2015;6(4):1126-35.
- Gill KK, Sandhu HS, Kaur R. Evaluation of lipid peroxidation and antioxidant status on fenvalerate, nitrate and their co-exposure in *Bubalus bubalis*. *Pesticide biochemistry and physiology*. 2015;123:19-23.
- Glover KP, Chen Z, Markell LK, Han X. Synergistic Gene Expression Signature Observed in TK6 Cells upon Co-Exposure to UVC-Irradiation and Protein Kinase C-Activating Tumor Promoters. *PloS one*. 2015;10(10):e0139850.
- Gooyers CE, McMillan EM, Noguchi M, Quadriatero J, Callaghan JP. Characterizing the combined effects of force, repetition and posture on injury pathways and micro-structural damage in isolated functional spinal units from sub-acute-failure magnitudes of cyclic compressive loading. *Clinical biomechanics (Bristol, Avon)*. 2015;30(9):953-9.
- Gresits I, Necz PP, Janossy G, Thuroczy G. Extremely low frequency (ELF) stray magnetic fields of laboratory equipment: a possible co-exposure conducting experiments on cell cultures. *Electromagnetic biology and medicine*. 2015;34(3):244-50.
- Gu W, Zhu P, Jiang D, He X, Li Y, Ji J, et al. A novel and simple cell-based electrochemical impedance biosensor for evaluating the combined toxicity of DON and ZEN. *Biosensors & bioelectronics*. 2015;70:447-54.
- Hapieienko D, Lavrenchuk H. Radiomodifying and antitoxic effect of natural polymineral substances on the viability of the cell line L929 under the combined exposure to ionizing radiation and ions of heavy metals. *Problemy radiatsiinoi medytyny ta radiobiologii*. 2015;20:474-89.
- Herr C, Han G, Li D, Tschernig T, Dinh QT, BeiSswenger C, et al. Combined exposure to bacteria and cigarette smoke resembles characteristic phenotypes of human COPD in a murine disease model. *Experimental and toxicologic pathology : official journal of the Gesellschaft fur Toxikologische Pathologie*. 2015;67(3):261-9.
- Hogan MK, Kovalycsik T, Sun Q, Rajagopalan S, Nelson RJ. Combined effects of exposure to dim light at night and fine particulate matter on C3H/HeNHsd mice. *Behavioural brain research*. 2015;294:81-8.
- Huang B, Feng M, Li D, Yang Y. Antagonistic joint toxicity assessment of two current-use phthalates with waterborne copper in liver of *Carassius auratus* using biochemical biomarkers. *Ecotoxicology and environmental safety*. 2015;116:107-12.
- Iswarya V, Bhuvaneshwari M, Alex SA, Iyer S, Chaudhuri G, Chandrasekaran PT, et al. Combined toxicity of two crystalline phases (anatase and rutile) of Titania nanoparticles towards freshwater microalgae: *Chlorella* sp. *Aquatic toxicology (Amsterdam, Netherlands)*. 2015;161:154-69.
- Iwasaki Y, Brinkman SF. Application of a generalized linear mixed model to analyze mixture toxicity: survival of brown trout affected by copper and zinc. *Environmental toxicology and chemistry*. 2015;34(4):816-20.
- Jain A, Agrawal S, Flora SJS. Arsenic and nicotine co-exposure lead to some synergistic effects on oxidative stress and apoptotic markers in young rat blood, liver, kidneys and brain. *Toxicology reports*. 2015;2:1334-46.
- Jayasumana C, Gunatilake S, Siribaddana S. Simultaneous exposure to multiple heavy metals and glyphosate may contribute to Sri Lankan agricultural nephropathy. *BMC nephrology*. 2015;16:103.

Katsnelson BA, Panov VG, Minigaliyeva IA, Varaksin AN, Privalova LI, Slyshkina TV, et al. Further development of the theory and mathematical description of combined toxicity: An approach to classifying types of action of three-factorial combinations (a case study of manganese-chromium-nickel subchronic intoxication). *Toxicology*. 2015;334:33-44.

Kim J, Kim S. State of the art in the application of QSAR techniques for predicting mixture toxicity in environmental risk assessment. *SAR and QSAR in environmental research*. 2015;26(1):41-59.

Lanteigne M, Whiting SA, Lydy MJ. Mixture toxicity of imidacloprid and cyfluthrin to two non-target species, the fathead minnow *Pimephales promelas* and the amphipod *Hyalella azteca*. *Archives of environmental contamination and toxicology*. 2015;68(2):354-61.

Lee W-M, Yoon Y, An Y-J. Combined toxicities of methyl tert-butyl ether and its metabolite tert-butyl alcohol on earthworms via different exposure routes. *Chemosphere*. 2015;128:191-8.

Li J, Lu S, Liu G, Zhou Y, Lv Y, She J, et al. Co-exposure to polycyclic aromatic hydrocarbons, benzene and toluene and their dose-effects on oxidative stress damage in kindergarten-aged children in Guangzhou, China. *The Science of the total environment*. 2015;524-525:74-80.

Li Y, Wu H, Wei X, He Y, Li B, Li Y, et al. Subcellular distribution of Cd and Zn and MT mRNA expression in the hepatopancreas of *Sinopotamon henanense* after single and co-exposure to Cd and Zn. *Comparative biochemistry and physiology Toxicology & pharmacology : CBP*. 2015;167:117-30.

Lima MPR, Soares AMVM, Loureiro S. Responses of wheat (*Triticum aestivum*) and turnip (*Brassica rapa*) to the combined exposure of carbaryl and ultraviolet radiation. *Environmental toxicology and chemistry*. 2015;34(7):1665-74.

Loizou GD, McNally K, Jones K, Cocker J. The application of global sensitivity analysis in the development of a physiologically based pharmacokinetic model for m-xylene and ethanol co-exposure in humans. *Frontiers in pharmacology*. 2015;6:135.

Loprinzi PD. Combined effects of accelerometer-assessed physical activity and dietary behavior on all-cause mortality in a national prospective cohort study. *International journal of cardiology*. 2015;201:258-9.

Lu C-F, Yuan X-Y, Li L-Z, Zhou W, Zhao J, Wang Y-M, et al. Combined exposure to nano-silica and lead induced potentiation of oxidative stress and DNA damage in human lung epithelial cells. *Ecotoxicology and environmental safety*. 2015;122:537-44.

Margerit A, Lecomte-Pradines C, Svendsen C, Frelon S, Gomez E, Gilbin R. Nested interactions in the combined toxicity of uranium and cadmium to the nematode *Caenorhabditis elegans*. *Ecotoxicology and environmental safety*. 2015;118:139-48.

Mohmood I, Ahmad I, Asim M, Costa L, Lopes CB, Trindade T, et al. Interference of the co-exposure of mercury with silica-coated iron oxide nanoparticles can modulate genotoxicity induced by their individual exposures--a paradox depicted in fish under in vitro conditions. *Environmental science and pollution research international*. 2015;22(5):3687-96.

Morales M, Iraola V, Leonor JR, Bartra J, Rodriguez F, Boquete M, et al. Different sensitization to storage mites depending on the co-exposure to house dust mites. *Annals of allergy, asthma & immunology : official publication of the American College of Allergy, Asthma, & Immunology*. 2015;114(1):36-42.e1.

Nascimento FJA, Svendsen C, Bradshaw C. Combined Effects from gamma Radiation and Fluoranthene Exposure on Carbon Transfer from Phytoplankton to Zooplankton. *Environmental science & technology*. 2015;49(17):10624-31.

Nigro M, Bernardeschi M, Costagliola D, Della Torre C, Frenzilli G, Guidi P, et al. n-TiO₂ and CdCl₂ co-exposure to titanium dioxide nanoparticles and cadmium: Genomic, DNA and chromosomal damage

evaluation in the marine fish European sea bass (*Dicentrarchus labrax*). *Aquatic toxicology* (Amsterdam, Netherlands). 2015;168:72-7.

Nys C, Asselman J, Hochmuth JD, Janssen CR, Blust R, Smolders E, et al. Mixture toxicity of nickel and zinc to *Daphnia magna* is noninteractive at low effect sizes but becomes synergistic at high effect sizes. *Environmental toxicology and chemistry*. 2015;34(5):1091-102.

Nzabarushimana E, Prior S, Miousse IR, Pathak R, Allen AR, Latendresse J, et al. Combined exposure to protons and (⁵⁶Fe) leads to overexpression of *Il13* and reactivation of repetitive elements in the mouse lung. *Life sciences in space research*. 2015;7:1-8.

Ondracek K, Bandouchova H, Hilscherova K, Kovacova V, Linhart P, Miksikova M, et al. Mixture toxicity of microcystin-LR, paraoxon and bromadiolone in *Xenopus laevis* embryos. *Neuro endocrinology letters*. 2015;36 Suppl 1:114-9.

Palikova M, Papezikova I, Kopp R, Mares J, Markova Z, Navratil S, et al. Effect of arsenic and cyanobacterial co-exposure on pathological, haematological and immunological parameters of rainbow trout (*Oncorhynchus mykiss*). *Neuro endocrinology letters*. 2015;36 Suppl 1:57-63.

Panov VG, Katsnelson BA, Varaksin AN, Privalova LI, Kireyeva EP, Sutunkova MP, et al. Further development of mathematical description for combined toxicity: A case study of lead-fluoride combination. *Toxicology reports*. 2015;2:297-307.

Park H, Lee K, Moon C-S, Woo K, Kang T-S, Chung E-K, et al. Simultaneous Exposure to Heavy Metals among Residents in the Industrial Complex: Korean National Cohort Study. *International journal of environmental research and public health*. 2015;12(6):5905-17.

Pirani M, Best N, Blangiardo M, Liverani S, Atkinson RW, Fuller GW. Analysing the health effects of simultaneous exposure to physical and chemical properties of airborne particles. *Environment international*. 2015;79:56-64.

Qin L-T, Wu J, Mo L-Y, Zeng H-H, Liang Y-P. Linear regression model for predicting interactive mixture toxicity of pesticide and ionic liquid. *Environmental science and pollution research international*. 2015;22(16):12759-68.

Raffel TR, Halstead NT, McMahan TA, Davis AK, Rohr JR. Temperature variability and moisture synergistically interact to exacerbate an epizootic disease. *Proceedings Biological sciences*. 2015;282(1801):20142039.

Rocco L, Santonastaso M, Nigro M, Mottola F, Costagliola D, Bernardeschi M, et al. Genomic and chromosomal damage in the marine mussel *Mytilus galloprovincialis*: Effects of the combined exposure to titanium dioxide nanoparticles and cadmium chloride. *Marine environmental research*. 2015;111:144-8.

Saito H, Kato M, Yoshida A, Naito M. The ingestion of a fructose-containing beverage combined with fat cream exacerbates postprandial lipidemia in young healthy women. *Journal of atherosclerosis and thrombosis*. 2015;22(1):85-94.

Saito H, Kato M, Yoshida A, Naito M. The Ingestion of a Fructose-Containing Beverage Combined with Fat Cream Exacerbates Postprandial Lipidemia in Young Healthy Women. *Journal of atherosclerosis and thrombosis*. 2015;22(6):645.

Shan Q, Huang F, Wang J, Du Y. Effects of co-exposure to 2,3,7,8-tetrachlorodibenzo-p-dioxin and polychlorinated biphenyls on nonalcoholic fatty liver disease in mice. *Environmental toxicology*. 2015;30(12):1364-74.

Stamou M, Uwimana E, Flannery BM, Kania-Korwel I, Lehmler H-J, Lein PJ. Subacute nicotine co-exposure has no effect on 2,2',3,5',6- pentachlorobiphenyl disposition but alters hepatic cytochrome P450 expression in the male rat. *Toxicology*. 2015;338:59-68.

- Stojak A, Bonnevie NL, Jones DS. Evaluation of metals, metalloids, and ash mixture toxicity using sediment toxicity testing. *Integrated environmental assessment and management*. 2015;11(1):21-31.
- Szyszkowicz M. An approach to represent a combined exposure to air pollution. *International journal of occupational medicine and environmental health*. 2015;28(5):823-30.
- Taranukhin AG, Saransaari P, Kiianmaa K, Oja SS. Hypoglycemia is one possible mechanism in the combined toxicity of ethanol and taurine. *Advances in experimental medicine and biology*. 2015;803:305-12.
- Tong F, Zhao Y, Gu X, Gu C, Lee CCC. Joint toxicity of tetracycline with copper(II) and cadmium(II) to *Vibrio fischeri*: effect of complexation reaction. *Ecotoxicology (London, England)*. 2015;24(2):346-55.
- Tong T, Wilke CM, Wu J, Binh CTT, Kelly JJ, Gaillard J-F, et al. Combined Toxicity of Nano-ZnO and Nano-TiO₂: From Single- to Multinanomaterial Systems. *Environmental science & technology*. 2015;49(13):8113-23.
- Tregub P, Kulikov V, Motin Y, Bepalov A, Osipov I. Combined exposure to hypercapnia and hypoxia provides its maximum neuroprotective effect during focal ischemic injury in the brain. *Journal of stroke and cerebrovascular diseases : the official journal of National Stroke Association*. 2015;24(2):381-7.
- van Nierop LE, Slotje P, van Zandvoort M, Kromhout H. Simultaneous exposure to MRI-related static and low-frequency movement-induced time-varying magnetic fields affects neurocognitive performance: A double-blind randomized crossover study. *Magnetic resonance in medicine*. 2015;74(3):840-9.
- Wang F, Qi H-X, You J. Joint toxicity of sediment-associated DDT and copper to a polychaete, *Nereis succinea*. *Ecotoxicology (London, England)*. 2015;24(2):424-32.
- Wang N, Wang XC, Ma X. Characteristics of concentration-inhibition curves of individual chemicals and applicability of the concentration addition model for mixture toxicity prediction. *Ecotoxicology and environmental safety*. 2015;113:176-82.
- Wang Y, Chen C, Zhao X, Wang Q, Qian Y. Assessing joint toxicity of four organophosphate and carbamate insecticides in common carp (*Cyprinus carpio*) using acetylcholinesterase activity as an endpoint. *Pesticide biochemistry and physiology*. 2015;122:81-5.
- Wang Y, Wu L, Li J, Fang D, Zhong C, Chen JX, et al. Synergistic exacerbation of mitochondrial and synaptic dysfunction and resultant learning and memory deficit in a mouse model of diabetic Alzheimer's disease. *Journal of Alzheimer's disease : JAD*. 2015;43(2):451-63.
- Wildemann TM, Weber LP, Siciliano SD. Combined exposure to lead, inorganic mercury and methylmercury shows deviation from additivity for cardiovascular toxicity in rats. *Journal of applied toxicology : JAT*. 2015;35(8):918-26.
- Wilkinson AD, Collier CJ, Flores F, Negri AP. Acute and additive toxicity of ten photosystem-II herbicides to seagrass. *Scientific reports*. 2015;5:17443.
- Xu D-m, Wang Y-h, Wang N, Rao G-w. Effects of single and co-exposure of Cu and chlorpyrifos on the toxicity of earthworm. *Huan jing ke xue= Huanjing kexue*. 2015;36(1):280-5.
- Xu X, Chiung YM, Lu F, Qiu S, Ji M, Huo X. Associations of cadmium, bisphenol A and polychlorinated biphenyl co-exposure in utero with placental gene expression and neonatal outcomes. *Reproductive toxicology (Elmsford, NY)*. 2015;52:62-70.
- Xu X, Liu J, Huang C, Lu F, Chiung YM, Huo X. Association of polycyclic aromatic hydrocarbons (PAHs) and lead co-exposure with child physical growth and development in an e-waste recycling town. *Chemosphere*. 2015;139:295-302.

- Xu Y-B, Xu J-X, Chen J-L, Huang L, Zhou S-Q, Zhou Y, et al. Antioxidative responses of *Pseudomonas fluorescens* YZ2 to simultaneous exposure of Zn and Cefradine. *Ecotoxicology* (London, England). 2015;24(7-8):1788-97.
- Xu Y-B, Zhou Y, Ruan J-J, Xu S-H, Gu J-D, Huang S-S, et al. Endogenous nitric oxide in *Pseudomonas fluorescens* ZY2 as mediator against the combined exposure to zinc and cefradine. *Ecotoxicology* (London, England). 2015;24(4):835-43.
- Yan Z, Li X, Chen J, Tam NF-Y. Combined toxicity of cadmium and copper in *Avicennia marina* seedlings and the regulation of exogenous jasmonic acid. *Ecotoxicology and environmental safety*. 2015;113:124-32.
- Yang G, Chen C, Wang Y, Cai L, Kong X, Qian Y, et al. Joint toxicity of chlorpyrifos, atrazine, and cadmium at lethal concentrations to the earthworm *Eisenia fetida*. *Environmental science and pollution research international*. 2015;22(12):9307-15.
- Yu Y, Duan J, Li Y, Yu Y, Jin M, Li C, et al. Combined toxicity of amorphous silica nanoparticles and methylmercury to human lung epithelial cells. *Ecotoxicology and environmental safety*. 2015;112:144-52.
- Zeng Y, Wang L, Jiang L, Cai X, Li Y. Joint Toxicity of Lead, Chromium, Cobalt and Nickel to *Photobacterium phosphoreum* at No Observed Effect Concentration. *Bulletin of environmental contamination and toxicology*. 2015;95(2):260-4.
- Zhang H, Shin PKS, Cheung SG. Physiological responses and scope for growth upon medium-term exposure to the combined effects of ocean acidification and temperature in a subtidal scavenger *Nassarius conoidalis*. *Marine environmental research*. 2015;106:51-60.
- Zhang W, Liu K, Li J, Chen L, Lin K. Uptake and depuration kinetics of lead (Pb) and biomarker responses in the earthworm *Eisenia fetida* after simultaneous exposure to decabromodiphenyl ether (BDE209). *Ecotoxicology and environmental safety*. 2015;113:45-51.
- Zhang X-Q, Hu X-N, Chen C-D, Liu H-J. Combined toxicity of cadmium and S-metolachlor to *Scenedesmus obliquus*. *Huan jing ke xue= Huanjing kexue*. 2015;36(3):1069-74.
- Zhang Y, Ye C, Wang A, Zhu X, Chen C, Xian J, et al. Isolated and combined exposure to ammonia and nitrite in giant freshwater pawn (*Macrobrachium rosenbergii*): effects on the oxidative stress, antioxidant enzymatic activities and apoptosis in haemocytes. *Ecotoxicology* (London, England). 2015;24(7-8):1601-10.
- Zhou Y, Xu Y-B, Xu J-X, Zhang X-H, Xu S-H, Du Q-P. Combined toxic effects of heavy metals and antibiotics on a *Pseudomonas fluorescens* strain ZY2 isolated from swine wastewater. *International journal of molecular sciences*. 2015;16(2):2839-50.
- A study on the combined toxicity of DDT, 666, As, Hg and Cr (author's transl). *Zhonghua yu fang yi xue za zhi* [Chinese journal of preventive medicine]. 1980;14(2):86-8.
- Abdel-Rahman A, Abou-Donia S, El-Masry E, Shetty A, Abou-Donia M. Stress and combined exposure to low doses of pyridostigmine bromide, DEET, and permethrin produce neurochemical and neuropathological alterations in cerebral cortex, hippocampus, and cerebellum. *Journal of toxicology and environmental health Part A*. 2004;67(2):163-92.
- Abou-Donia MB, Dechkovskaia AM, Goldstein LB, Abdel-Rahman A, Bullman SL, Khan WA. Co-exposure to pyridostigmine bromide, DEET, and/or permethrin causes sensorimotor deficit and alterations in brain acetylcholinesterase activity. *Pharmacology, biochemistry, and behavior*. 2004;77(2):253-62.
- Abou-Donia MB, Suliman HB, Khan WA, Abdel-Rahman AA. Testicular germ-cell apoptosis in stressed rats following combined exposure to pyridostigmine bromide, N,N-diethyl m-toluamide (DEET), and permethrin. *Journal of toxicology and environmental health Part A*. 2003;66(1):57-73.

- Abreu-Villaca Y, Cavina CC, Ribeiro-Carvalho A, Correa-Santos M, Naiff VF, Filgueiras CC, et al. Combined exposure to tobacco smoke and ethanol during adolescence leads to short- and long-term modulation of anxiety-like behavior. *Drug and alcohol dependence*. 2013;133(1):52-60.
- Abreu-Villaca Y, de Carvalho Graca AC, Ribeiro-Carvalho A, Naiff VdF, Manhaes AC, Filgueiras CC. Combined exposure to tobacco smoke and ethanol in adolescent mice elicits memory and learning deficits both during exposure and withdrawal. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*. 2013;15(7):1211-21.
- Abreu-Villaca Y, Medeiros AH, Lima CS, Faria FP, Filgueiras CC, Manhaes AC. Combined exposure to nicotine and ethanol in adolescent mice differentially affects memory and learning during exposure and withdrawal. *Behavioural brain research*. 2007;181(1):136-46.
- Abreu-Villaca Y, Nunes F, do E Queiroz-Gomes F, Manhaes AC, Filgueiras CC. Combined exposure to nicotine and ethanol in adolescent mice differentially affects anxiety levels during exposure, short-term, and long-term withdrawal. *Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology*. 2008;33(3):599-610.
- Abu-Qare AW, Abou-Donia MB. Combined exposure to DEET (N,N-diethyl-m-toluamide) and permethrin: pharmacokinetics and toxicological effects. *Journal of toxicology and environmental health Part B, Critical reviews*. 2003;6(1):41-53.
- Abu-Qare AW, Abou-Donia MB. Combined exposure to DEET (N,N-diethyl-m-toluamide) and permethrin-induced release of rat brain mitochondrial cytochrome c. *Journal of toxicology and environmental health Part A*. 2001;63(4):243-52.
- Abu-Qare AW, Abou-Donia MB. Combined exposure to sarin and pyridostigmine bromide increased levels of rat urinary 3-nitrotyrosine and 8-hydroxy-2'-deoxyguanosine, biomarkers of oxidative stress. *Toxicology letters*. 2001;123(1):51-8.
- Adam O, Badot P-M, Degiorgi F, Crini G. Mixture toxicity assessment of wood preservative pesticides in the freshwater amphipod *Gammarus pulex* (L.). *Ecotoxicology and environmental safety*. 2009;72(2):441-9.
- Adam SE, Al-Yahya MA, Al-Farhan AH. Combined toxicity of Cassia senna and *Citrullus colocynthis* in rats. *Veterinary and human toxicology*. 2001;43(2):70-2.
- Adedara IA, Owumi SE, Uwaifo AO, Farombi EO. Aflatoxin B₁ and ethanol co-exposure induces hepatic oxidative damage in mice. *Toxicology and industrial health*. 2010;26(10):717-24.
- Agadzhanian AN, Divakova SM. Central hemodynamics in the combined exposure of the body to hypoxia and physical loading against a background of a limited motor regimen. *Vestnik Akademii meditsinskikh nauk SSSR*. 1980(8):47-55.
- Agadzhanyan NA, Bragin LK, Davydov GA, Spasskii Yu A. Dynamics of external respiration and gas exchange during combined exposure to hypoxia and hypercapnia. *Human physiology*. 1984;10(4):282-8.
- Agmon P, Livanos AC, Katzir A, Yariv A. Simultaneous exposure and development of photoresist materials: an analytical model. *Applied optics*. 1977;16(10):2612-4.
- Ait-Aissa S, Ausseil O, Palluel O, Vindimian E, Garnier-Laplace J, Porcher JM. Biomarker responses in juvenile rainbow trout (*Oncorhynchus mykiss*) after single and combined exposure to low doses of cadmium, zinc, PCB77 and 17beta-oestradiol. *Biomarkers : biochemical indicators of exposure, response, and susceptibility to chemicals*. 2003;8(6):491-508.
- Aitbaev TK. Changes in various indicators of lipid metabolism during isolated and combined exposure to hydrogen fluoride, sulfur dioxide and hydrogen sulfide in various concentrations. *Gigiena truda i professional'nye zabolevaniia*. 1984(6):16-9.

- Aizenshtadt VS. Primary reactions to combined exposure to chemical substances. *Gigiena truda i professional'nye zabolevaniia*. 1979(10):35-7.
- Akande MG, Aliu YO, Ambali SF, Ayo JO. Taurine mitigates cognitive impairment induced by chronic co-exposure of male Wistar rats to chlorpyrifos and lead acetate. *Environmental toxicology and pharmacology*. 2014;37(1):315-25.
- Akhmetzhanova BT, Beskov VN, Bazeliuk LT. Pathomorphologic studies of lungs, liver and kidneys in experimental animals under combined exposure to coal rock dust and physical exertion. *Meditina truda i promyshlennaia ekologiya*. 2005(4):42-5.
- Ali F, Sultana S. Repeated short-term stress synergizes the ROS signalling through up regulation of NFkB and iNOS expression induced due to combined exposure of trichloroethylene and UVB rays. *Molecular and cellular biochemistry*. 2012;360(1-2):133-45.
- Allison AC, Lightbown JW. Inhibition of cellular respiration by co-carcinogenic fractions of croton oil. *Nature*. 1961;189:892-5.
- Al-Omar MA, Abbas AK, Al-Obaidy SA. Combined effect of exposure to lead and chlordane on the testicular tissues of swiss mice. *Toxicology letters*. 2000;115(1):1-8.
- Alpen EL, Sheline GE. The combined effects of thermal burns and whole body X irradiation on survival time and mortality. *Annals of surgery*. 1954;140(1):113-8.
- Altenburger R, Backhaus T, Boedeker W, Faust M, Scholze M. Simplifying complexity: Mixture toxicity assessment in the last 20 years. *Environmental toxicology and chemistry*. 2013;32(8):1685-7.
- Altenburger R, Nendza M, Schuurmann G. Mixture toxicity and its modeling by quantitative structure-activity relationships. *Environmental toxicology and chemistry*. 2003;22(8):1900-15.
- Altenburger R, Scholz S, Schmitt-Jansen M, Busch W, Escher BI. Mixture toxicity revisited from a toxicogenomic perspective. *Environmental science & technology*. 2012;46(5):2508-22.
- Altenburger R. Understanding combined effects for metal co-exposure in ecotoxicology. *Metal ions in life sciences*. 2011;8:1-26.
- Amanmuradova N. Combined exposure to sinusoidal modulated currents and ultrasonic vibrations in the neurological manifestations of lumbar osteochondrosis. *Voprosy kurortologii, fizioterapii, i lechebnoi fizicheskoi kultury*. 1990(1):30-2.
- Amiri F, Ko EA, Javeshghani D, Reudelhuber TL, Schiffrin EL. Deleterious combined effects of salt-loading and endothelial cell restricted endothelin-1 overexpression on blood pressure and vascular function in mice. *Journal of hypertension*. 2010;28(6):1243-51.
- Ammons MCB, Ward LS, Dowd S, James GA. Combined treatment of *Pseudomonas aeruginosa* biofilm with lactoferrin and xylitol inhibits the ability of bacteria to respond to damage resulting from lactoferrin iron chelation. *International journal of antimicrobial agents*. 2011;37(4):316-23.
- Amosov IS, Malygina AI, Morozova TG, Kurpeshev OK. Microcirculation of tumors and adjacent tissues during combined exposure to metronidazole and hyperthermia. *Meditinskaiia radiologiya*. 1987;32(1):70-2.
- An J, Yin L, Shang Y, Zhong Y, Zhang X, Wu M, et al. The combined effects of BDE47 and BaP on oxidatively generated DNA damage in L02 cells and the possible molecular mechanism. *Mutation research*. 2011;721(2):192-8.
- An Y-J, Lee W-M. Comparative and combined toxicities of toluene and methyl tert-butyl ether to an Asian earthworm *Perionyx excavatus*. *Chemosphere*. 2008;71(3):407-11.
- Anan'eva TV, Likholat EA, Dvoretiskii AI. The biological effects of combined exposure to low-dose irradiation and heavy metal ions. *Radiatsionnaia biologiya, radioecologiya*. 2000;40(4):410-5.

- Andersen JK. Paraquat and iron exposure as possible synergistic environmental risk factors in Parkinson's disease. *Neurotoxicity research*. 2003;5(5):307-13.
- Anderson R, Eftychis HA. Potentiation of the generation of reactive oxidants by human phagocytes during exposure to benoxaprofen and ultraviolet radiation in vitro. *The British journal of dermatology*. 1986;115(3):285-95.
- Andriianov IV, Smirnov VP. The enhanced lethality of cells in suspension during simultaneous exposure to pulsed electrical and shock-wave acoustic fields. *Izvestia Akademii nauk Serii biologicheskaja*. 1999(4):390-5.
- Andrzejak R, Antonowicz J, Lewczuk E, Tomczyk J, Smolik R. Effect of combined exposure (noise, dust, nitrogen oxides) on health status of metal workers in heavy industry. Evaluation of erythrocyte metabolism. *Medycyna pracy*. 1992;43(5):411-20.
- Angerer J, Lehnert G. Occupational chronic exposure to organic solvents. VIII. Phenolic compounds--metabolites of alkylbenzenes in man. Simultaneous exposure to ethylbenzene and xylenes. *International archives of occupational and environmental health*. 1979;43(2):145-50.
- Anisimov IZ. Response of central neurons to combined exposure to the neuropeptides angiotensin II and bradykinin. *Fiziologicheskii zhurnal SSSR imeni I M Sechenova*. 1987;73(4):475-9.
- Anjum NA, Srikanth K, Mohmood I, Sayeed I, Trindade T, Duarte AC, et al. Brain glutathione redox system significance for the control of silica-coated magnetite nanoparticles with or without mercury co-exposures mediated oxidative stress in European eel (*Anguilla anguilla* L.). *Environmental science and pollution research international*. 2014;21(12):7746-56.
- Annaeva LR, Khvastunov RM. Principles of growth of unidirectional combined effects of harmful substances after increase in their quantity. *Gigiena i sanitariia*. 1989(7):10-3.
- Anno GH, Bloom RM. Combined effects modeling of ionizing radiation and biological agent exposures. *Military medicine*. 2002;167(2 Suppl):107-9.
- Antoniskis D, Easley AC, Espina BM, Davidson PT, Barnes PF. Combined toxicity of zidovudine and antituberculosis chemotherapy. *The American review of respiratory disease*. 1992;145(2 Pt 1):430-4.
- Antov GP, Ivanovich EK. Changes of some enzyme activity in adrenal glands exposed to combined effect of vibration and lead in rats. *Gigiena i sanitariia*. 1993(4):55-7.
- Anwer J, Mehrotra NK. Effect of simultaneous exposure to nickel chloride and benzo(a)pyrene on developing chick embryos. *Drug and chemical toxicology*. 1986;9(2):171-83.
- Ardestani MM, Oduber F, van Gestel CAM. A combined toxicokinetics and toxicodynamics approach to assess the effect of porewater composition on cadmium bioavailability to *Folsomia candida*. *Environmental toxicology and chemistry*. 2014;33(7):1570-7.
- Armianov G, Khalkova Z. Experimental studies on changes in cerebral bioelectrical activity during combined exposure to benzene and tobacco smoke. *Problemi na khigienata*. 1988;13:114-8.
- Arrebola JP, Mutch E, Cuellar M, Quevedo M, Claire E, Mejia LM, et al. Factors influencing combined exposure to three indicator polychlorinated biphenyls in an adult cohort from Bolivia. *Environmental research*. 2012;116:17-25.
- Arrhenius A, Backhaus T, Gronvall F, Junghans M, Scholze M, Blanck H. Effects of three antifouling agents on algal communities and algal reproduction: mixture toxicity studies with TBT, Irgarol, and Sea-Nine. *Archives of environmental contamination and toxicology*. 2006;50(3):335-45.
- Arrhenius A, Gronvall F, Scholze M, Backhaus T, Blanck H. Predictability of the mixture toxicity of 12 similarly acting congeneric inhibitors of photosystem II in marine periphyton and epipsammon communities. *Aquatic toxicology (Amsterdam, Netherlands)*. 2004;68(4):351-67.

Ashauer R, Boxall ABA, Brown CD. Modeling combined effects of pulsed exposure to carbaryl and chlorpyrifos on *Gammarus pulex*. *Environmental science & technology*. 2007;41(15):5535-41.

Asselman J, Meys J, Waegeman W, De Baets B, De Schamphelaere KAC. Combined exposure to cyanobacteria and carbaryl results in antagonistic effects on the reproduction of *Daphnia pulex*. *Environmental toxicology and chemistry*. 2013;32(9):2153-8.

Attarchi M, Dehghan F, Afrasyabi M, Sadeghi Z, Mohammadi S. Combined effect of cigarette smoking and occupational exposures on lung function: a cross-sectional study of rubber industry workers. *Workplace health & safety*. 2013;61(5):213-20.

Attarchi M, Golabadi M, Labbafinejad Y, Mohammadi S. Combined effects of exposure to occupational noise and mixed organic solvents on blood pressure in car manufacturing company workers. *American journal of industrial medicine*. 2013;56(2):243-51.

Atzori L, Flore C, Corriga AM, Cherchi P, Casula D, Congiu L. Mechanisms of PCBs mixture toxicity on isolated rat hepatocytes. *Industrial health*. 1991;29(2):57-64.

Aubertin AM, Travo C, Fellingner E, Kirn A. DNA damage: a consequence of the combined effect of virus infection and incorporated radioactive thymidine. *Biochemical and biophysical research communications*. 1979;88(1):68-74.

Aune T, Espenes A, Aasen JAB, Quilliam MA, Hess P, Larsen S. Study of possible combined toxic effects of azaspiracid-1 and okadaic acid in mice via the oral route. *Toxicology : official journal of the International Society on Toxinology*. 2012;60(5):895-906.

Awad WA, Ghareeb K, Dadak A, Hess M, Bohm J. Single and combined effects of deoxynivalenol mycotoxin and a microbial feed additive on lymphocyte DNA damage and oxidative stress in broiler chickens. *PloS one*. 2014;9(1):e88028.

Axelson O. Cancer and combined exposures to occupational and environmental factors. Recent results in cancer research *Fortschritte der Krebsforschung Progres dans les recherches sur le cancer*. 1991;122:60-70.

Azevedo Costa CL, Chaves IS, Ventura-Lima J, Ferreira JLR, Ferraz L, de Carvalho LM, et al. In vitro evaluation of co-exposure of arsenium and an organic nanomaterial (fullerene, C₆₀) in zebrafish hepatocytes. *Comparative biochemistry and physiology Toxicology & pharmacology : CBP*. 2012;155(2):206-12.

Baarson KA, Snyder CA. Evidence for the disruption of the bone marrow microenvironment by combined exposures to inhaled benzene and ingested ethanol. *Archives of toxicology*. 1991;65(5):414-20.

Babenko AP, Cherniakov GM. The characteristics of the reactions of excitable tissue to combined exposure to microwaves and low-intensity ultrasound. *Gigiena truda i professional'nye zabolovaniia*. 1992(5):19-21.

Backhaus T, Porsbring T, Arrhenius A, Brosche S, Johansson P, Blanck H. Single-substance and mixture toxicity of five pharmaceuticals and personal care products to marine periphyton communities. *Environmental toxicology and chemistry*. 2011;30(9):2030-40.

Baev VI, Volkova ZA, Maksimov NA. Role of tissue glycolysis in combined exposure to hypercapnia, hypoxia and hypothermia. *Fiziologicheskii zhurnal SSSR imeni I M Sechenova*. 1978;64(6):858-63.

Bairakova A, Baev I, Kalina I. Chromosomal translocations evoked in the sex cells of male mice by combined exposure to chronic gamma and acute x-ray irradiation. *Kosmicheskaiia biologii i aviakosmicheskaiia meditsina*. 1978;12(6):72-3.

Balbi T, Smerilli A, Fabbri R, Ciacci C, Montagna M, Grasselli E, et al. Co-exposure to n-TiO₂ and Cd²⁺ results in interactive effects on biomarker responses but not in increased toxicity in the marine bivalve *M. galloprovincialis*. *The Science of the total environment*. 2014;493:355-64.

- Balkow S, Loser K, Krummen M, Higuchi T, Rothoef T, Apelt J, et al. Dendritic cell activation by combined exposure to anti-CD40 plus interleukin (IL)-12 and IL-18 efficiently stimulates anti-tumor immunity. *Experimental dermatology*. 2009;18(1):78-87.
- Ball JK, Field WE, Roe FJ, Walters M. THE CARCINOGENIC AND CO-CARCINOGENIC EFFECTS OF PARAFFIN WAX PELLETS AND GLASS BEADS IN THE MOUSE BLADDER. *British journal of urology*. 1964;36:225-37.
- Ballou JE, George LA, 2nd, Thompson RC. The combined toxic effects of plutonium plus x-ray in rats. *Health physics*. 1962;8:581-7.
- Baloch IB, Baloch MK. Irritant and co-carcinogenic diterpene esters from the latex of *Euphorbia caudicifolia* L. *Journal of Asian natural products research*. 2010;12(7):600-13.
- Bandeled O, Camacho L, Ferguson M, Reimschuessel R, Stine C, Black T, et al. Performance of urinary and gene expression biomarkers in detecting the nephrotoxic effects of melamine and cyanuric acid following diverse scenarios of co-exposure. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2013;51:106-13.
- Banni M, Bouraoui Z, Clerandeu C, Narbonne JF, Boussetta H. Mixture toxicity assessment of cadmium and benzo a pyrene in the sea worm *Hediste diversicolor*. *Chemosphere*. 2009;77(7):902-6.
- Banni M, Jebali J, Guerbej H, Dondero F, Boussetta H, Viarengo A. Mixture toxicity assessment of nickel and chlorpyrifos in the sea bass *Dicentrarchus labrax*. *Archives of environmental contamination and toxicology*. 2011;60(1):124-31.
- Bao L, Shi H. Potential molecular mechanisms for combined toxicity of arsenic and alcohol. *Journal of inorganic biochemistry*. 2010;104(12):1229-33.
- Barantseva MI, Ivanova SM, Pakhomova AA, Nikitin EI, Vorozhtsova SV. Cytogenetic and biochemical assay of an unidirectional effect of chronic combined exposure of laboratory animals to isoeffective concentrations of chemical substances. *Aviakosmicheskaja i ekologicheskaja meditsina = Aerospace and environmental medicine*. 2006;40(3):50-4.
- Barantseva MI, Mukhamedieva LN, Fedorenko BS, Ivanova SM, Pakhomova AA, Vorozhtsova SV. Cytogenetic and biochemical reactions of experimental animals to combined exposure to low-intensity radiation and chemical factors. *Aviakosmicheskaja i ekologicheskaja meditsina = Aerospace and environmental medicine*. 2007;41(2):54-60.
- Barantseva MI, Mukhamedieva LN, Fedorenko BS, Vorozhtsova SV. Chromosomal aberrations upon isolated and combined exposures to chemical substances and ionizing irradiation. *Gigiena i sanitariia*. 2009(1):67-70.
- Barata C, Calbet A, Saiz E, Ortiz L, Bayona JM. Predicting single and mixture toxicity of petrogenic polycyclic aromatic hydrocarbons to the copepod *Oithona davisae*. *Environmental toxicology and chemistry*. 2005;24(11):2992-9.
- Barkhatova TP. Combined toxicosis in pregnant women (nephropathy against a background of pyelonephritis). *Fel'dsher i akusherka*. 1986;51(8):50-4.
- Barkhatova TP. Combined toxicosis, placental insufficiency and fetal hypotrophy. *Fel'dsher i akusherka*. 1989;54(7):49-53.
- Bartrem C, Tirima S, von Lindern I, von Braun M, Worrell MC, Mohammad Anka S, et al. Unknown risk: co-exposure to lead and other heavy metals among children living in small-scale mining communities in Zamfara State, Nigeria. *International journal of environmental health research*. 2014;24(4):304-19.

- Basch PF, Joe LK. Infection of single snails with two different trematodes. I. Simultaneous exposure and early development of a schistosome and an echinostome. *Zeitschrift fur Parasitenkunde (Berlin, Germany)*. 1966;27(3):252-9.
- Baughman P, Marott JL, Lange P, Martin CJ, Shankar A, Peterson EL, et al. Combined effect of lung function level and decline increases morbidity and mortality risks. *European journal of epidemiology*. 2012;27(12):933-43.
- Baum JW, Kuehner AV, Benz RD, Carsten AL. A system for simultaneous exposure of small animals to 60-Hz electric and magnetic fields. *Bioelectromagnetics*. 1991;12(2):85-99.
- Bechaux C, Zetlaoui M, Tressou J, Leblanc J-C, Heraud F, Crepet A. Identification of pesticide mixtures and connection between combined exposure and diet. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2013;59:191-8.
- Belden JB, Lydy MJ. Joint toxicity of chlorpyrifos and esfenvalerate to fathead minnows and midge larvae. *Environmental toxicology and chemistry*. 2006;25(2):623-9.
- Bellas J. Prediction and assessment of mixture toxicity of compounds in antifouling paints using the sea-urchin embryo-larval bioassay. *Aquatic toxicology (Amsterdam, Netherlands)*. 2008;88(4):308-15.
- Bellelli G, Mazzola P, Corsi M, Zambon A, Corrao G, Castoldi G, et al. The combined effect of ADL impairment and delay in time from fracture to surgery on 12-month mortality: an observational study in orthogeriatric patients. *Journal of the American Medical Directors Association*. 2012;13(7):664.e9-e14.
- Belokrinitskii VS, Grin AN. Morpho-functional changes in the kidneys after combined exposure to UHF-field and hypoxia. *Vrachebnoe delo*. 1983(1):112-5.
- Berenguer P, Soulage C, Fautrel A, Pequignot J-M, Abraini JH. Behavioral and neurochemical effects induced by subchronic combined exposure to toluene at 40 ppm and noise at 80 dB-A in rats. *Physiology & behavior*. 2004;81(3):527-34.
- Beritic-Stahuljak D, Valic F, Cigula M, Butkovic D. Simultaneous exposure to airborne flour particles and thermal load as cause of respiratory impairment. *International archives of occupational and environmental health*. 1976;37(3):193-203.
- Berry G, Newhouse ML, Antonis P. Combined effect of asbestos and smoking on mortality from lung cancer and mesothelioma in factory workers. *British journal of industrial medicine*. 1985;42(1):12-8.
- Berry G, Newhouse ML, Turok M. Combined effect of asbestos exposure and smoking on mortality from lung cancer in factory workers. *Lancet (London, England)*. 1972;2(7775):476-8.
- Bertash VI, Baev VI, Zozuliakova SV. Rat epiphysis in combined exposure to hypoxia, hypercapnia and cooling. *Fiziologicheskii zhurnal*. 1979;25(3):251-4.
- Bertash VI, Baev VI. Rat thymus gland under combined exposure to hypoxia, hypercapnia and cooling. *Fiziologicheskii zhurnal*. 1978;24(1):29-33.
- Beyaert R, Schulze-Osthoff K, Van Roy F, Fiers W. Synergistic induction of interleukin-6 by tumor necrosis factor and lithium chloride in mice: possible role in the triggering and exacerbation of psoriasis by lithium treatment. *European journal of immunology*. 1992;22(8):2181-4.
- Bianca W, Naf F. Responses of cattle to the combined exposure, to diurnal temperature rhythm (-5 to 25 degrees C) and to simulated high-altitude (4,000 m). *International journal of biometeorology*. 1979;23(4):299-310.
- Bird MG, Wetmore BA, Letinski DJ, Nicolich M, Chen M, Schnatter AR, et al. Influence of toluene co-exposure on the metabolism and genotoxicity of benzene in mice using continuous and intermittent exposures. *Chemico-biological interactions*. 2010;184(1-2):233-9.

- Black P, Niu L, Sachdeva M, Lean D, Poon R, Bowers WJ, et al. Modulation of the effects of methylmercury on rat neurodevelopment by co-exposure with Labrador Tea (*Rhododendron tomentosum* ssp. *subarcticum*). *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2011;49(9):2336-42.
- Bobb JF, Dominici F, Peng RD. Reduced hierarchical models with application to estimating health effects of simultaneous exposure to multiple pollutants. *Journal of the Royal Statistical Society Series C, Applied statistics*. 2013;62(3).
- Bobrov LL, Ponomarenko GN, Bulychev AB, Vinokurov IV, Kozyrev PV, Rastrova VK. The combined exposure to physical factors at the sanatorium-health resort stage of patient rehabilitation in ischemic heart disease. *Voprosy kurortologii, fizioterapii, i lechebnoi fizicheskoi kultury*. 1996(1):6-9.
- Bocker R, Estler CJ, Feiner C, Hopf G, Schrader K, Schramm W. Combined toxic effects of tetracycline and ethinyl estradiol on liver function of mice. *Research in experimental medicine Zeitschrift fur die gesamte experimentelle Medizin einschliesslich experimenteller Chirurgie*. 1985;185(2):151-62.
- Bol'shakova TD, Voitenko AM, Neizhmakova NA, Shafran LM. Effect of combined exposure to noise, vibration, and high temperatures on sympathetic-adrenal system in sailors. *Gigiena truda i professional'nye zabolovaniia*. 1982(9):44-6.
- Bonnet J, Neukomm S. Carcinogenic and co-carcinogenic substances in tobacco smoke. *Acta - Unio Internationalis Contra Cancrum*. 1959;15:561-3.
- Borek C, Ong A, Zaider M. Ozone activates transforming genes in vitro and acts as a synergistic co-carcinogen with gamma-rays only if delivered after radiation. *Carcinogenesis*. 1989;10(8):1549-51.
- Borgert CJ, Quill TF, McCarty LS, Mason AM. Can mode of action predict mixture toxicity for risk assessment? *Toxicology and applied pharmacology*. 2004;201(2):85-96.
- Borodin YI, Michurina SV, Arkhipov SA, Belkin AD, Jurakovskiy IP. Expression of intracellular molecular apoptosis regulator Bcl-2 in the liver in isolated and combined exposure to 24-h illumination and industrial frequency magnetic field. *Bulletin of experimental biology and medicine*. 2008;145(4):511-3.
- Borska L, Fiala Z, Smejkalova J, Hamakova K, Kremlacek J. Possible genotoxic risk of combined exposure to pharmaceutical coal tar and UV-B radiation. *Central European journal of public health*. 2004;12 Suppl:S14-5.
- Bourret J, Viallier J, Tolot F, Robillard J. Polyneuritis by simultaneous exposure to trichloroethylene and gasoline. *Revue medicale de la Suisse romande*. 1968;88(3):173-81.
- Bouslimi A, Ouannes Z, Golli EE, Bouaziz C, Hassen W, Bacha H. Cytotoxicity and oxidative damage in kidney cells exposed to the mycotoxins ochratoxin a and citrinin: individual and combined effects. *Toxicology mechanisms and methods*. 2008;18(4):341-9.
- Bovenzi M, Mauro M, Ronchese F, Larese Filon F. Neck and upper limb disorders caused by combined exposures to ergonomic risk factors and hand-transmitted vibration. *Giornale italiano di medicina del lavoro ed ergonomia*. 2008;30(3 Suppl):39-45.
- Bovenzi M, Negro C, Fiorito A, Petronio L. Risk of occupational hypoacusis caused by combined exposure to continuous and impulsive noise. *La Medicina del lavoro*. 1982;73(5):515-25.
- Bozhko AP, Gorodetskaia IV. The enhancement of body resistance to combined exposure to immobilization and cold with thyroid hormones. *Nauchnye doklady vysshei shkoly Biologicheskie nauki*. 1991(11):80-6.
- Brauer RW, Dutcher JA, Vorus WS. Effects of prolonged simultaneous exposure of CD-1 mice to high pressures and inert gas narcosis. *Journal of applied physiology (Bethesda, Md : 1985)*. 1986;61(6):2129-35.

- Breitholtz M, Nyholm JR, Karlsson J, Andersson PL. Are individual NOEC levels safe for mixtures? A study on mixture toxicity of brominated flame-retardants in the copepod *Nitocra spinipes*. *Chemosphere*. 2008;72(9):1242-9.
- Brescia F, Sarti M, Massa R, Calabrese ML, Sannino A, Scarfi MR. Reactive oxygen species formation is not enhanced by exposure to UMTS 1950 MHz radiation and co-exposure to ferrous ions in Jurkat cells. *Bioelectromagnetics*. 2009;30(7):525-35.
- Brown AR, Hosken DJ, Balloux F, Bickley LK, LePage G, Owen SF, et al. Genetic variation, inbreeding and chemical exposure--combined effects in wildlife and critical considerations for ecotoxicology. *Philosophical transactions of the Royal Society of London Series B, Biological sciences*. 2009;364(1534):3377-90.
- Brumen V, Horvat D, Trosic I. Potential genotoxic risk related to simultaneous exposure to radionuclides and cytostatics. *American journal of industrial medicine*. 1995;27(6):871-6.
- Buha A, Antonijevic B, Bulat Z, Jacevic V, Milovanovic V, Matovic V. The impact of prolonged cadmium exposure and co-exposure with polychlorinated biphenyls on thyroid function in rats. *Toxicology letters*. 2013;221(2):83-90.
- Bukharin EA, Vladimirov VN, Svistunov NT. Certain characteristics of the motorists' body reaction to short-term exposure to combined effects of exhaust gases, noise and vibration. *Gigiena truda i professional'nye zabolovaniia*. 1977(9):46-8.
- Buldakov LA, Dement'ev SI, Levdik TI. Longevity of animals in combined exposure to total gamma irradiation and incorporated plutonium-239. *Radiobiologiya*. 1987;27(1):123-6.
- Buldakov LA, Levdik TI. Long-term effects of combined exposure to external ¹³⁷Cs gamma-radiation and incorporated ²³⁹Pu. *Radiobiologiya*. 1984;24(5):668-71.
- Bundschuh M, Appeltauer A, Dabrunz A, Schulz R. Combined effect of invertebrate predation and sublethal pesticide exposure on the behavior and survival of *Asellus aquaticus* (Crustacea; Isopoda). *Archives of environmental contamination and toxicology*. 2012;63(1):77-85.
- Burkart W, Jung T. Health risks from combined exposures: mechanistic considerations on deviations from additivity. *Mutation research*. 1998;411(2):119-28.
- Butler TR, Berry JN, Sharrett-Field LJ, Pauly JR, Prendergast MA. Long-term ethanol and corticosterone co-exposure sensitize the hippocampal ca1 region pyramidal cells to insult during ethanol withdrawal in an NMDA GluN2B subunit-dependent manner. *Alcoholism, clinical and experimental research*. 2013;37(12):2066-73.
- Byzitter J, Lukowiak K, Karnik V, Dalesman S. Acute combined exposure to heavy metals (Zn, Cd) blocks memory formation in a freshwater snail. *Ecotoxicology (London, England)*. 2012;21(3):860-8.
- Campion SN, Catlin N, Houseman EA, Hensley J, Sui Y, Gaido KW, et al. Molecular alterations underlying the enhanced disruption of spermatogenesis by 2,5-hexanedione and carbendazim co-exposure. *Reproductive toxicology (Elmsford, NY)*. 2012;33(3):382-9.
- Campo P, Lataye R, Cossec B, Villette V, Roure M, Barthelemy C. Combined effects of simultaneous exposure to toluene and ethanol on auditory function in rats. *Neurotoxicology and teratology*. 1998;20(3):321-32.
- Cappaert NL, Klis SF, Muijser H, Kulig BM, Smoorenburg GF. Simultaneous exposure to ethyl benzene and noise: synergistic effects on outer hair cells. *Hearing research*. 2001;162(1-2):67-79.
- Cardona A, Marhuenda D, Prieto MJ, Marti J, Periago JF, Sanchez JM. Behaviour of urinary 2,5-hexanedione in occupational co-exposure to n-hexane and acetone. *International archives of occupational and environmental health*. 1996;68(2):88-93.

Carfagna MA, Ponsler GD, Muhoberac BB. Inhibition of ATPase activity in rat synaptic plasma membranes by simultaneous exposure to metals. *Chemico-biological interactions*. 1996;100(1):53-65.

Carlsten C, Brauer M, Dimich-Ward H, Dybuncio A, Becker AB, Chan-Yeung M. Combined exposure to dog and indoor pollution: incident asthma in a high-risk birth cohort. *The European respiratory journal*. 2011;37(2):324-30.

Carpay SA, Kobel W, Doe J. Health risk of low-dose pesticides mixtures: a review of the 1985-1998 literature on combination toxicology and health risk assessment. *Journal of toxicology and environmental health Part B, Critical reviews*. 2000;3(1):1-25.

Cary R, Clarke S, Delic J. Effects of combined exposure to noise and toxic substances--critical review of the literature. *The Annals of occupational hygiene*. 1997;41(4):455-65.

Casado JM, Theumer M, Masih DT, Chulze S, Rubinstein HR. Experimental subchronic mycotoxicoses in mice: individual and combined effects of dietary exposure to fumonisins and aflatoxin B1. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2001;39(6):579-86.

Catlin NR, Huse SM, Boekelheide K. The stage-specific testicular germ cell apoptotic response to low-dose radiation and 2,5-hexanedione combined exposure. II: qRT-PCR array analysis reveals dose dependent adaptive alterations in the apoptotic pathway. *Toxicologic pathology*. 2014;42(8):1229-37.

Catlin NR, Huse SM, Boekelheide K. The stage-specific testicular germ cell apoptotic response to low-dose X-irradiation and 2,5-hexanedione combined exposure. I: Validation of the laser capture microdissection method for qRT-PCR array application. *Toxicologic pathology*. 2014;42(8):1221-8.

Cedergreen N, Abbaspoor M, Sorensen H, Streibig JC. Is mixture toxicity measured on a biomarker indicative of what happens on a population level? A study with *Lemna minor*. *Ecotoxicology and environmental safety*. 2007;67(3):323-32.

Cedergreen N, Kudsk P, Mathiassen SK, Sorensen H, Streibig JC. Reproducibility of binary-mixture toxicity studies. *Environmental toxicology and chemistry*. 2007;26(1):149-56.

Cedergreen N, Sorensen H, Svendsen C. Can the joint effect of ternary mixtures be predicted from binary mixture toxicity results? *The Science of the total environment*. 2012;427-428:229-37.

Cedergreen N. Quantifying synergy: a systematic review of mixture toxicity studies within environmental toxicology. *PloS one*. 2014;9(5):e96580.

Cerna S, Hurbankova M, Kovacikova Z, Beno M, Wimmerova S. Lung cytotoxicity of combined exposure to refractory ceramic fibres and cigarette smoke. *Biomedical papers of the Medical Faculty of the University Palacky, Olomouc, Czechoslovakia*. 2005;149(2):381-4.

Chakraborty PK, Mustafi SB, Raha S. Pro-survival effects of repetitive low-grade oxidative stress are inhibited by simultaneous exposure to Resveratrol. *Pharmacological research*. 2008;58(5-6):281-9.

Chandra SV, Murthy RC, Saxena DK, Lal B. Effects of pre- and postnatal combined exposure to Pb and Mn on brain development in rats. *Industrial health*. 1983;21(4):273-9.

Chang HW, Shen DH, Kou SY. STUDIES ON THE COMBINED TOXICITIES OF ANTIMONIALS AND ARSENICALS. *Yao xue xue bao = Acta pharmaceutica Sinica*. 1964;11:370-4.

Chang HW, Shen DH. STUDIES ON THE COMBINED TOXICITY OF TARTAR EMETIC AND SODIUM ANTIMONY GLUCONATE. *Yao xue xue bao = Acta pharmaceutica Sinica*. 1964;11:568-70.

Chang H-Y, Shih T-S, Cheng C-C, Tsai C-Y, Lai J-S, Wang V-S. The effects of co-exposure to methyl ethyl ketone on the biological monitoring of occupational exposure to N,N-dimethylformamide. *International archives of occupational and environmental health*. 2003;76(2):121-8.

- Chang H-Y, Yun Y-D, Yu Y-C, Shih T-S, Lin M-S, Kuo H-W, et al. The effects of simultaneous exposure to methyl ethyl ketone and toluene on urinary biomarkers of occupational N,N-dimethylformamide exposure. *Toxicology letters*. 2005;155(3):385-95.
- Chang J-W, Chen H-L, Su H-J, Liao P-C, Guo H-R, Lee C-C. Simultaneous exposure of non-diabetics to high levels of dioxins and mercury increases their risk of insulin resistance. *Journal of hazardous materials*. 2011;185(2-3):749-55.
- Chang MJ, Singh NP, Hart RW. Effects of chrysotile co-exposure on BaP binding in normal human fibroblasts. *Environmental health perspectives*. 1983;51:241-4.
- Chang T-Y, Wang V-S, Hwang B-F, Yen H-Y, Lai J-S, Liu C-S, et al. Effects of co-exposure to noise and mixture of organic solvents on blood pressure. *Journal of occupational health*. 2009;51(4):332-9.
- Chang T-Y, Wang V-S, Lin S-Y, Yen H-Y, Lai J-S, Liu C-S. Co-exposure to noise, N,N-dimethylformamide, and toluene on 24-hour ambulatory blood pressure in synthetic leather workers. *Journal of occupational and environmental hygiene*. 2010;7(1):14-22.
- Chapman WH, Cronkite EP, Chambers FW, Jr., Morgan JE. Experimental procedures for the simultaneous exposure of large numbers of animals to total body x-radiation. *Radiology*. 1951;57(1):90-8.
- Chebotarev EE, Demina EA. Damage susceptibility of human lymphocyte chromosomes at different stages of the mitotic cycle in combined exposure to fast neutrons and postradiation hyperthermia. *TSitologija i genetika*. 1988;22(2):62-6.
- Chen C, Jiang X, Ren Y, Zhang Z. Arsenic trioxide co-exposure potentiates benzo(a)pyrene genotoxicity by enhancing the oxidative stress in human lung adenocarcinoma cell. *Biological trace element research*. 2013;156(1-3):338-49.
- Chen C, Wang Y, Zhao X, Qian Y, Wang Q. Combined toxicity of butachlor, atrazine and lambda-cyhalothrin on the earthworm *Eisenia fetida* by combination index (CI)-isobologram method. *Chemosphere*. 2014;112:393-401.
- Chen C, Wang Y, Zhao X, Wang Q, Qian Y. The combined toxicity assessment of carp (*Cyprinus carpio*) acetylcholinesterase activity by binary mixtures of chlorpyrifos and four other insecticides. *Ecotoxicology (London, England)*. 2014;23(2):221-8.
- Chen C-Y, Chen S-L, Christensen ER. Individual and combined toxicity of nitriles and aldehydes to *Raphidocelis subcapitata*. *Environmental toxicology and chemistry*. 2005;24(5):1067-73.
- Chen G, Geiling EMK. The acute joint toxicity of atabrine, quinine, hydroxyethylapocupreine, pamaquine and pentaquine. *The Journal of pharmacology and experimental therapeutics*. 1947;91(2):133-9.
- Chen G, Geiling EMK. The joint toxicity of atabrine and quinine, atabrine and plasmochin, quinine and plasmochin. *Federation proceedings*. 1946;5(1 Pt 2):170.
- Chen G-D, Henderson D. Cochlear injuries induced by the combined exposure to noise and styrene. *Hearing research*. 2009;254(1-2):25-33.
- Chen J, Liao Y, Zhao Y, Wang L, Lu G, Zhao T. Quantitative structure-activity relationships and mixture toxicity studies of heterocyclic nitrogen compounds. *Bulletin of environmental contamination and toxicology*. 1996;57(1):77-83.
- Chen J, Ling M, Fu X, Lopez JA, Chung DW. Simultaneous exposure of sites in von Willebrand factor for glycoprotein Ib binding and ADAMTS13 cleavage: studies with ristocetin. *Arteriosclerosis, thrombosis, and vascular biology*. 2012;32(11):2625-30.
- Chen L, Xie M, Bi Y, Wang G, Deng S, Liu Y. The combined effects of UV-B radiation and herbicides on photosynthesis, antioxidant enzymes and DNA damage in two bloom-forming cyanobacteria. *Ecotoxicology and environmental safety*. 2012;80:224-30.

Chen L-W, Wang Y-Q, Bian G-L, Wei L-C, Yung K-L. Neurokinin-3 peptide instead of neurokinin-1 synergistically exacerbates kainic acid-inducing degeneration of neurons in the substantia nigra of mice. *Journal of neurochemistry*. 2008;105(1):203-16.

Chen X, An H, Ao L, Sun L, Liu W, Zhou Z, et al. The combined toxicity of dibutyl phthalate and benzo(a)pyrene on the reproductive system of male Sprague Dawley rats in vivo. *Journal of hazardous materials*. 2011;186(1):835-41.

Chen X, Qin B, Li X, Jin T, Zhu G, Zhou W, et al. Effects of fluoride and cadmium co-exposure on bone in male rats. *Biological trace element research*. 2013;154(3):396-402.

Chen X, Wang K, Wang Z, Gan C, He P, Liang Y, et al. Effects of lead and cadmium co-exposure on bone mineral density in a Chinese population. *Bone*. 2014;63:76-80.

Cherkasov AS, Ringwood AH, Sokolova IM. Combined effects of temperature acclimation and cadmium exposure on mitochondrial function in eastern oysters *Crassostrea virginica* gmelin (Bivalvia: Ostreidae). *Environmental toxicology and chemistry*. 2006;25(9):2461-9.

Cherniuk VI. Combined exposure to vibration and the noise of agricultural tractors and self-propelled machinery and the tasks of hygienic regulation (a review of the literature). *Gigiena truda i professional'nye zabolevaniia*. 1984(9):35-7.

Chernook TB, Abdylidabekov TK, Kurmanalieva RD. Human functional status in combined exposure to industrial factors and mining migrations. *Gigiena truda i professional'nye zabolevaniia*. 1992(8):20-2.

Chinnasamy D, Fairbairn LJ, Neuenfeldt J, Treisman JS, Hanson JP, Jr., Margison GP, et al. Lentivirus-mediated expression of mutant MGMTP140K protects human CD34+ cells against the combined toxicity of O6-benzylguanine and 1,3-bis(2-chloroethyl)-nitrosourea or temozolomide. *Human gene therapy*. 2004;15(8):758-69.

Chiu C-C, Huang Y-T, Chuang H-L, Chen HH-C, Chung T-C. Co-exposure of lipopolysaccharide and *Pseudomonas aeruginosa* exotoxin A-induced multiple organ injury in rats. *Immunopharmacology and immunotoxicology*. 2009;31(1):75-82.

Chmut VG. Occupational allergic dermatoses resulting from combined exposure to metal allergens and polymers in work with polymer cement compounds. *Vestnik dermatologii i venerologii*. 1982(3):66-9.

Chmut VG. Sensitization state in combined exposure to chromium and polymeric materials. *Gigiena truda i professional'nye zabolevaniia*. 1981(10):26-8.

Cho Y, Turner ND, Davidson LA, Chapkin RS, Carroll RJ, Lupton JR. Colon cancer cell apoptosis is induced by combined exposure to the n-3 fatty acid docosahexaenoic acid and butyrate through promoter methylation. *Experimental biology and medicine* (Maywood, NJ). 2014;239(3):302-10.

Choi SJ, Widrick JJ. Combined effects of fatigue and eccentric damage on muscle power. *Journal of applied physiology* (Bethesda, Md : 1985). 2009;107(4):1156-64.

Choi Y-H, Kim K. Noise-induced hearing loss in Korean workers: co-exposure to organic solvents and heavy metals in nationwide industries. *PloS one*. 2014;9(5):e97538.

Chou T-C, Sheu H-M, Chiu J-E, Wu J-D, Shih T-S, Chang H-Y. Combined exposure to carbon disulfide and sulfuric acid simultaneously increases the risk of hand dermatitis in rayon industry. *Journal of exposure analysis and environmental epidemiology*. 2004;14(7):551-7.

Christiansen S, Scholze M, Axelstad M, Boberg J, Kortenkamp A, Hass U. Combined exposure to anti-androgens causes markedly increased frequencies of hypospadias in the rat. *International journal of andrology*. 2008;31(2):241-8.

Chuang H-L, Chiu C-C, Chen T-H, Chen HH-C, Chu Y-Y, Huang Y-T. Different bacteria species lipopolysaccharide co-exposure with *Pseudomonas* exotoxin A on multiple organ injury induction. *Immunopharmacology and immunotoxicology*. 2009;31(4):616-24.

Chugh SN, Mittal A, Arora V, Yadav SP, Sood AK. Combined toxicity due to alcohol and aluminium phosphide. *The Journal of the Association of Physicians of India*. 1993;41(10):679-80.

Ciaravino V, Meltz ML, Erwin DN. Effects of radiofrequency radiation and simultaneous exposure with mitomycin C on the frequency of sister chromatid exchanges in Chinese hamster ovary cells. *Environmental mutagenesis*. 1987;9(4):393-9.

Ciccocioppo R, Antonelli L, Biondini M, Perfumi M, Pompei P, Massi M. Memory impairment following combined exposure to delta(9)-tetrahydrocannabinol and ethanol in rats. *European journal of pharmacology*. 2002;449(3):245-52.

Cikrt M, Blaha K, Nerudova J, Bittnerova D, Jehlickova H, Jones MM. Distribution and excretion of cadmium and nickel after simultaneous exposure and the effect of N-benzyl-D-glucamine dithiocarbamate on their biliary and urinary excretion. *Journal of toxicology and environmental health*. 1992;35(4):211-20.

Cleuvers M. Mixture toxicity of the anti-inflammatory drugs diclofenac, ibuprofen, naproxen, and acetylsalicylic acid. *Ecotoxicology and environmental safety*. 2004;59(3):309-15.

Clinton SK, Imrey PB, Mangian HJ, Nandkumar S, Visek WJ. The combined effects of dietary fat, protein, and energy intake on azoxymethane-induced intestinal and renal carcinogenesis. *Cancer research*. 1992;52(4):857-65.

Coccini T, Randine G, Castoldi AF, Grandjean P, Ostendorp G, Heinzow B, et al. Effects of developmental co-exposure to methylmercury and 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) on cholinergic muscarinic receptors in rat brain. *Neurotoxicology*. 2006;27(4):468-77.

Coccini T, Roda E, Castoldi AF, Goldoni M, Poli D, Bernocchi G, et al. Perinatal co-exposure to methylmercury and PCB153 or PCB126 in rats alters the cerebral cholinergic muscarinic receptors at weaning and puberty. *Toxicology*. 2007;238(1):34-48.

Cohen MD, Zelikoff JT, Chen LC, Schlesinger RB. Immunotoxicologic effects of inhaled chromium: role of particle solubility and co-exposure to ozone. *Toxicology and applied pharmacology*. 1998;152(1):30-40.

Combination toxicology. Proceedings of a European conference. Veldhoven, The Netherlands, 11-13 October 1995. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1996;34(11-12):1025-185.

Conolly RB. Biologically motivated quantitative models and the mixture toxicity problem. *Toxicological sciences : an official journal of the Society of Toxicology*. 2001;63(1):1-2.

Coors A, Dobrick J, Moder M, Kehrer A. Mixture toxicity of wood preservative products in the fish embryo toxicity test. *Environmental toxicology and chemistry*. 2012;31(6):1239-48.

Crepet A, Heraud F, Bechaux C, Gouze ME, Pierlot S, Fastier A, et al. The PERICLES research program: an integrated approach to characterize the combined effects of mixtures of pesticide residues to which the French population is exposed. *Toxicology*. 2013;313(2-3):83-93.

Cruse JP, Lewin MR, Ferulano GP, Clark CG. Co-carcinogenic effects of dietary cholesterol in experimental colon cancer. *Nature*. 1978;276(5690):822-5.

Cruse P, Lewin M, Clark CG. Dietary cholesterol is co-carcinogenic for human colon cancer. *Lancet (London, England)*. 1979;1(8119):752-5.

Cunha KS, Reguly ML, Gimmler-Luz MC, Santos JH, Lehmann M, de Andrade HH. Co-mutagenic effect of tannic acid on ring-X chromosome loss induced by mitomycin C in sperm cells of *Drosophila melanogaster*. *Mutation research*. 1994;308(2):143-8.

Dale NM, Wyatt RD, Fuller HL. Additive toxicity of aflatoxin and dietary tannins in broiler chicks. *Poultry science*. 1980;59(11):2417-20.

Dardenne F, Nobels I, De Coen W, Blust R. Mixture toxicity and gene inductions: can we predict the outcome? *Environmental toxicology and chemistry*. 2008;27(3):509-18.

Datta JK, Banerjee A, Sikdar MS, Gupta S, Mondal NK. Impact of combined exposure of chemical, fertilizer, bio-fertilizer and compost on growth, physiology and productivity of *Brassica campestris* in old alluvial soil. *Journal of environmental biology*. 2009;30(5 Suppl):797-800.

Davies HW, Vlaanderen JJ, Henderson SB, Brauer M. Correlation between co-exposures to noise and air pollution from traffic sources. *Occupational and environmental medicine*. 2009;66(5):347-50.

Dawson DA, Allen EMG, Allen JL, Baumann HJ, Bensinger HM, Genco N, et al. Time-dependence in mixture toxicity prediction. *Toxicology*. 2014;326:153-63.

Dawson DA, Allen JL, Schultz TW, Poch G. Time-dependence in mixture toxicity with soft-electrophiles: 2. Effects of relative reactivity level on time-dependent toxicity and combined effects for selected Michael acceptors. *Journal of environmental science and health Part A, Toxic/hazardous substances & environmental engineering*. 2008;43(1):43-52.

Dawson DA, Genco N, Bensinger HM, Guinn D, Il'giovine ZJ, Wayne Schultz T, et al. Evaluation of an asymmetry parameter for curve-fitting in single-chemical and mixture toxicity assessment. *Toxicology*. 2012;292(2-3):156-61.

Dawson DA, Jeyaratnam J, Mooneyham T, Poch G, Schultz TW. Mixture toxicity of SN2-reactive soft electrophiles: 1. Evaluation of mixtures containing alpha-halogenated acetonitriles. *Archives of environmental contamination and toxicology*. 2010;59(4):532-41.

Dawson DA, Mooneyham T, Jeyaratnam J, Schultz TW, Poch G. Mixture toxicity of S(N)2-reactive soft electrophiles: 2-evaluation of mixtures containing ethyl alpha-halogenated acetates. *Archives of environmental contamination and toxicology*. 2011;61(4):547-57.

Dawson DA, Poch G, Schultz TW. Chemical mixture toxicity testing with *Vibrio fischeri*: combined effects of binary mixtures for ten soft electrophiles. *Ecotoxicology and environmental safety*. 2006;65(2):171-80.

Dawson DA, Poch G, Schultz TW. Mixture toxicity of SN2-reactive soft electrophiles: 3. Evaluation of ethyl alpha-halogenated acetates with alpha-halogenated acetonitriles. *Archives of environmental contamination and toxicology*. 2014;66(2):248-58.

Dawson DA, Wilke TS. Initial evaluation of developmental malformation as an end point in mixture toxicity hazard assessment for aquatic vertebrates. *Ecotoxicology and environmental safety*. 1991;21(2):215-26.

de Angelis E, Runnstrom J. The effect of temporary treatment of animal half embryos with lithium and the modification of this effect by simultaneous exposure to actinomycin D. *Wilhelm Roux' Archiv fur Entwicklungsmechanik der Organismen*. 1970;164(3):236-46.

de Haas EM, Reuvers B, Moermond CTA, Koelmans AA, Kraak MHS. Responses of benthic invertebrates to combined toxicant and food input in floodplain lake sediments. *Environmental toxicology and chemistry*. 2002;21(10):2165-71.

de Mik G, Henderson PT, Bragt PC. Screening models in occupational health practice for assessment of combined exposure to chemicals at work. *International archives of occupational and environmental health*. 1988;Suppl:54-62.

- de Ruiter-Bootsma AL, Davids JA. Survival of spermatogonial stem cells in the CBA mouse after combined exposure to 1-MeV fission neutrons and hydroxyurea. *Radiation research*. 1981;85(1):38-46.
- de The G. Co-carcinogenic events in herpesvirus oncogenesis: a review. IARC scientific publications. 1978(24 Pt 2):933-45.
- De Zwart D, Posthuma L. Complex mixture toxicity for single and multiple species: proposed methodologies. *Environmental toxicology and chemistry*. 2005;24(10):2665-76.
- Dedova LN, Denisov LA. The treatment of apical periodontitis by using combined exposure to focal measured vacuum and local d'Arsonval treatment. *Stomatologiya*. 1991;70(1):26-7.
- DeLorenzo ME, Serrano L. Individual and mixture toxicity of three pesticides; atrazine, chlorpyrifos, and chlorothalonil to the marine phytoplankton species *Dunaliella tertiolecta*. *Journal of environmental science and health Part B, Pesticides, food contaminants, and agricultural wastes*. 2003;38(5):529-38.
- DeLorenzo ME, Serrano L. Mixture toxicity of the antifouling compound irgarol to the marine phytoplankton species *Dunaliella tertiolecta*. *Journal of environmental science and health Part B, Pesticides, food contaminants, and agricultural wastes*. 2006;41(8):1349-60.
- Dennison JE, Bigelow PL, Mumtaz MM, Andersen ME, Dobrev ID, Yang RSH. Evaluation of potential toxicity from co-exposure to three CNS depressants (toluene, ethylbenzene, and xylene) under resting and working conditions using PBPK modeling. *Journal of occupational and environmental hygiene*. 2005;2(3):127-35.
- Deshevoi IB, Moroz BB, Sudakov KV, Iumatov EA, Salieva RM. Status of the hematopoietic system in rats exposed to the combined effects of chronic low-dose radiation and emotional stress. *Biulleten' eksperimental'noi biologii i meditsiny*. 1995;119(4):349-53.
- Desplats P, Patel P, Kosberg K, Mante M, Patrick C, Rockenstein E, et al. Combined exposure to Maneb and Paraquat alters transcriptional regulation of neurogenesis-related genes in mice models of Parkinson's disease. *Molecular neurodegeneration*. 2012;7:49.
- Dhawan M, Flora SJ, Singh S, Tandon SK. Chelation of lead during co-exposure to ethanol. *Biochemistry international*. 1989;19(5):1067-75.
- Dietrich S, Ploessl F, Bracher F, Laforsch C. Single and combined toxicity of pharmaceuticals at environmentally relevant concentrations in *Daphnia magna*--a multigenerational study. *Chemosphere*. 2010;79(1):60-6.
- Dimitrie DA, Sparling DW. Joint toxicity of chlorpyrifos and endosulfan to Pacific treefrog (*Pseudacris regilla*) tadpoles. *Archives of environmental contamination and toxicology*. 2014;67(3):444-52.
- Dinman BD. ACUTE COMBINED TOXICITY DUE TO DDVP AND CHLORDANE. *Archives of environmental health*. 1964;9:765-9.
- Diouf B, Djoneidi M, Niang A, Diallo S, Moreira-Diop T, Bao O. A case of joint toxicity from pefloxacin in the treatment of nephrotic syndrome in a child. *Dakar medical*. 1996;41(2):105-7.
- Dirilgen N, Dogan F. Speciation of chromium in the presence of copper and zinc and their combined toxicity. *Ecotoxicology and environmental safety*. 2002;53(3):397-403.
- Dmitriev AI, Istomina GN. Change in the physical endurance of rats in the late periods after combined exposure to external gamma irradiation and internal radioactive iodine contamination. *Radiobiologiya*. 1978;18(5):777-9.
- Dobrzanska-Tataczuch L, Starek A. Evaluation of combined toxic action of benzene and ethanol in the rat fetus. *Folia medica Cracoviensia*. 1991;32(3-4):257-73.

- Dobrzynska MM, Gajewski AK. Induction of micronuclei in bone marrow and sperm head abnormalities after combined exposure of mice to low doses of X-rays and acrylamide. *Teratogenesis, carcinogenesis, and mutagenesis*. 2000;20(3):133-40.
- Dobrzynska MM, Gajewski AK. Mouse dominant lethal and sperm abnormality studies with combined exposure to X-rays and mitomycin C. *Mutation research*. 1994;306(2):203-9.
- Dolgikh OV, Zaitseva NV, Krivtsov AV, Gorshkova KG, Lanin DV, Bubnova OA, et al. Justifying genetic and immune markers of efficiency and sensitivity under combined exposure to risk factors in mining industry workers. *Meditcina truda i promyshlennaia ekologiia*. 2014(12):19-23.
- Dolgushin MV, Sosedova LM. Hydrolase and oxidoreductase activities in peripheral blood lymphocytes in combined exposure to biological allergens and sulfur dioxide. *Bulletin of experimental biology and medicine*. 2006;141(2):257-60.
- Dong Y-Y, Lei B-L, Zhang C-B, Zhang F-J. Joint toxicity on multi-component mixtures of SDS and substituted aromatic compounds. *Huan jing ke xue= Huanjing kexue*. 2006;27(8):1643-6.
- Dorea JG. Co-exposure and confounders during neurodevelopment: we need them in the bigger picture of secondhand smoke exposure during pregnancy. *Environmental research*. 2011;111(8):1332-3.
- Dorea JG. Multiple toxic heavy metals and neonatal neurobehavior in China require considering co-exposure to Thimerosal-ethylmercury and adjuvant-aluminum. *Neurotoxicology and teratology*. 2012;34(1):219.
- Dorts J, Bauwin A, Kestemont P, Jolly S, Sanchez W, Silvestre F. Proteasome and antioxidant responses in *Cottus gobio* during a combined exposure to heat stress and cadmium. *Comparative biochemistry and physiology Toxicology & pharmacology : CBP*. 2012;155(2):318-24.
- Douki T, Ksoury Z, Marie C, Favier A, Ravanat J-L, Maitre A. Genotoxicity of combined exposure to polycyclic aromatic hydrocarbons and UVA--a mechanistic study. *Photochemistry and photobiology*. 2008;84(5):1133-40.
- Drabkova M, Admiraal W, Marsalek B. Combined exposure to hydrogen peroxide and light--selective effects on cyanobacteria, green algae, and diatoms. *Environmental science & technology*. 2007;41(1):309-14.
- Du H, Zhu X, Fan C, Xu S, Wang Y, Zhou Y. Oxidative damage and OGG1 expression induced by a combined effect of titanium dioxide nanoparticles and lead acetate in human hepatocytes. *Environmental toxicology*. 2012;27(10):590-7.
- Dubovicky M, Paton S, Morris M, Mach M, Lucot JB. Effects of combined exposure to pyridostigmine bromide and shaker stress on acoustic startle response, pre-pulse inhibition and open field behavior in mice. *Journal of applied toxicology : JAT*. 2007;27(3):276-83.
- Dudka J, Szczepaniak S, Mazur M. Evaluation of the combined effect of lead and sodium nitrite on some blood biochemical parameters in blood of rats during subchronic exposure. Influence on levels of methemoglobin, sulfhydryl groups and tryptophan. *Roczniki Panstwowego Zakladu Higieny*. 1997;48(1):23-9.
- Dudka J, Szczepaniak S, Tomaszewska B. Evaluation of the combined effect of cupric chloride and sodium nitrite on selected biochemical parameters in rat plasma (subchronic exposure). *Roczniki Panstwowego Zakladu Higieny*. 1995;46(4):383-7.
- Dudka J, Szczepaniak S. Evaluation of the combined effect of copper chloride and sodium nitrate on blood methemoglobin and tryptophan level in rats (subchronic exposure). *Roczniki Panstwowego Zakladu Higieny*. 1995;46(2):169-74.

Duman F, Koca FD. Single and combined effects of exposure concentration and duration on biological responses of *Ceratophyllum demersum* L. exposed to Cr species. *International journal of phytoremediation*. 2014;16(7-12):1192-208.

Duran-Reynals F. Studies on the combined effect of chemical carcinogens, hormones and virus infection. *Texas reports on biology and medicine*. 1957;15(3):754-77; discussion 77-81.

Duran-Reynals ML. COMBINED EFFECTS OF CHEMICAL CARCINOGENIC AGENTS AND VIRUSES. *Progress in experimental tumor research*. 1963;3:148-85.

Dutreux N, Notermans S, Gongora-Nieto MM, Barbosa-Canovas GV, Swanson BG. Effects of combined exposure of *micrococcus luteus* to nisin and pulsed electric fields. *International journal of food microbiology*. 2000;60(2-3):147-52.

Dwivedi N, Bhutia YD, Kumar V, Yadav P, Kushwaha P, Swarnkar H, et al. Effects of combined exposure to dichlorvos and monocrotophos on blood and brain biochemical variables in rats. *Human & experimental toxicology*. 2010;29(2):121-9.

Dwivedi N, Flora G, Kushwaha P, Flora SJS. Alpha-lipoic acid protects oxidative stress, changes in cholinergic system and tissue histopathology during co-exposure to arsenic-dichlorvos in rats. *Environmental toxicology and pharmacology*. 2014;37(1):7-23.

Edwards AJ, Moon EY, Anderson D, McGregor DB. The effect of simultaneous exposure to bromodeoxyuridine and methyl methanesulphonate on sister-chromatid exchange frequency in cultured human lymphocytes. *Mutation research*. 1993;289(2):139-44.

Eichler T, Ma Q, Kelly C, Mishra J, Parikh S, Ransom RF, et al. Single and combination toxic metal exposures induce apoptosis in cultured murine podocytes exclusively via the extrinsic caspase 8 pathway. *Toxicological sciences : an official journal of the Society of Toxicology*. 2006;90(2):392-9.

Eichler TE, Ransom RF, Smoyer WE. Differential induction of podocyte heat shock proteins by prolonged single and combination toxic metal exposure. *Toxicological sciences : an official journal of the Society of Toxicology*. 2005;84(1):120-8.

el Dirdiri NI, Barakat SE, Adam SE. The combined toxicity of *Aristolochia bracteata* and *Cadaba rotundifolia* to goats. *Veterinary and human toxicology*. 1987;29(2):133-7.

Elkina NI, Maksutova AI. Alkaline phosphatase and transaminase activity in the liver and blood serum of rats in the late periods following combined exposure to external gamma radiation and alpha radiation from plutonium-239. *Radiobiologia*. 1986;26(6):838-42.

el-Masri HA, Tessari JD, Yang RS. Exploration of an interaction threshold for the joint toxicity of trichloroethylene and 1,1-dichloroethylene: utilization of a PBPK model. *Archives of toxicology*. 1996;70(9):527-39.

Elovaara E, Collan Y, Pfaffli P, Vainio H. The combined toxicity of technical grade xylene and ethanol in the rat. *Xenobiotica; the fate of foreign compounds in biological systems*. 1980;10(6):435-45.

Elsheikha HM, Hussein HS, Rahbar MH. Clinico-pathological effects of *Schistosoma mansoni* infection associated with simultaneous exposure to malathion in Swiss outbred albino mice. *Acta tropica*. 2008;108(1):11-9.

Elsner P. Protection from combination exposure. *Current problems in dermatology*. 2007;34:111-9.

Emelogu ES, Pollard P, Dymond P, Robinson CD, Webster L, McKenzie C, et al. Occurrence and potential combined toxicity of dissolved organic contaminants in the Forth estuary and Firth of Forth, Scotland assessed using passive samplers and an algal toxicity test. *The Science of the total environment*. 2013;461-462:230-9.

- Engel DC, Slemmer JE, Vlug AS, Maas AIR, Weber JT. Combined effects of mechanical and ischemic injury to cortical cells: secondary ischemia increases damage and decreases effects of neuroprotective agents. *Neuropharmacology*. 2005;49(7):985-95.
- Engstrom K, Riihimaki V, Laine A. Urinary disposition of ethylbenzene and m-xylene in man following separate and combined exposure. *International archives of occupational and environmental health*. 1984;54(4):355-63.
- Erickson RJ, Ankley GT, DeFoe DL, Kosian PA, Makynen EA. Additive toxicity of binary mixtures of phototoxic polycyclic aromatic hydrocarbons to the oligochaete *Lumbriculus variegatus*. *Toxicology and applied pharmacology*. 1999;154(1):97-105.
- Escher BI, Bramaz N, Lienert J, Neuwoehner J, Straub JO. Mixture toxicity of the antiviral drug Tamiflu(R) (oseltamivir ethylester) and its active metabolite oseltamivir acid. *Aquatic toxicology (Amsterdam, Netherlands)*. 2010;96(3):194-202.
- Escobar-Paramo P, Gougat-Barbera C, Hochberg ME. Evolutionary dynamics of separate and combined exposure of *Pseudomonas fluorescens* SBW25 to antibiotics and bacteriophage. *Evolutionary applications*. 2012;5(6):583-92.
- Estrada-Capetillo BL, Ortiz-Perez MD, Salgado-Bustamante M, Calderon-Aranda E, Rodriguez-Pinal CJ, Reynaga-Hernandez E, et al. Arsenic and fluoride co-exposure affects the expression of apoptotic and inflammatory genes and proteins in mononuclear cells from children. *Mutation research Genetic toxicology and environmental mutagenesis*. 2014;761:27-34.
- Evans FJ, Kinghorn AD. Proceedings: A screening procedure for Euphorbia co-carcinogenic irritants. *The Journal of pharmacy and pharmacology*. 1973;25:Suppl:145P-6.
- Evseeva TI, Geras'kin SA. Mechanism of induction of cytogenetic damage in plant meristematic cells caused by combined effect of heavy natural radionuclides and heavy and alkaline metals. *Radiatsionnaia biologiiia, radioecologiiia*. 2003;43(4):470-5.
- Evstaf'eva NI, Demin IM, Sheina NI, Kurnaeva VP, Kolbeneva LI. Morphofunctional changes in the main components of the endocrine system after combined exposure to noise and trichloroethylene. *Gigiena truda i professional'nye zabolevaniia*. 1986(11):15-9.
- Evstratova ES. Quantitative description of mammalian cell recovery after combined exposure to ionizing radiation with chemical agents. *Radiatsionnaia biologiiia, radioecologiiia*. 2012;52(3):268-75.
- Fabiani F, Cagnoni M, Fantini F. Morpho-functional changes in the hypothalamic nuclei following various stimuli. II. Effect of simultaneous exposure to cold stress and water overload on the morphology of the hypothalamic nuclei in the white rat. *Rassegna di neurologia vegetativa*. 1959;14:410-6.
- Fadeeva VK, Melesova LM, Sidorova MV, Vikhrova EM, Kustov VV. Effect of isolated and combined exposure to phenol and elevated air temperature on the white blood cells. *Gigiena i sanitariia*. 1986(6):11-3.
- Fahrig R. Anti-mutagenic agents are also co-recombinogenic and co-mutagenic agents are also anti-recombinogenic. *Mutation research*. 1995;326(2):245-6.
- Fahrig R. Antimutagenic effects of tumor promoters--co-mutagenic effects of co-carcinogens. *Basic life sciences*. 1990;52:385-8.
- Fahrig R. Anti-recombinogenic and convertible co-mutagenic effects of (E)-5-(2-bromovinyl)-2'-deoxyuridine (BVDU) and other 5-substituted pyrimidine nucleoside analogs in *S. cerevisiae* MP1. *Mutation research*. 1996;372(1):133-9.
- Falk SA. Combined effects of noise and ototoxic drugs. *Environmental health perspectives*. 1972;2:5-22.

Fang Y, Yang H, Liu B, Zhang L. Transcriptional response of lysozyme, metallothionein, and superoxide dismutase to combined exposure to heavy metals and bacteria in *Macra veneriformis*. *Comparative biochemistry and physiology Toxicology & pharmacology : CBP*. 2013;157(1):54-62.

Farraj AK, Boykin E, Ledbetter A, Andrews D, Gavett SH. Increased lung resistance after diesel particulate and ozone co-exposure not associated with enhanced lung inflammation in allergic mice. *Inhalation toxicology*. 2010;22(1):33-41.

Fayaz S, Karimmirza M, Tanhaei S, Fathi M, Torbati PM, Fard-Esfahani P. Increased risk of differentiated thyroid carcinoma with combined effects of homologous recombination repair gene polymorphisms in an Iranian population. *Asian Pacific journal of cancer prevention : APJCP*. 2014;14(11):6727-31.

Fazakas Z, Lengyel Z, Nagymajtenyi L. Combined effects of subchronic exposure to lead, mercury and alcohol on the spontaneous and evoked cortical activity in rats. *Arhiv za higijenu rada i toksikologiju*. 2005;56(3):249-56.

Fedorenko VI. Use of orthogonal plans for the experimental analysis of the combined effects of harmful substances. *Gigiena i sanitariia*. 1986(11):54-7.

Fedorov VI. Disorders developing under combined exposure to ionizing radiation and stress. *Patologicheskaiia fiziologiia i eksperimental'naia terapiia*. 1997(1):31-3.

Feola DJ, Garvy BA. Combination exposure to zidovudine plus sulfamethoxazole-trimethoprim diminishes B-lymphocyte immune responses to *Pneumocystis murina* infection in healthy mice. *Clinical and vaccine immunology : CVI*. 2006;13(2):193-201.

Fernandez N, Beiras R. Combined toxicity of dissolved mercury with copper, lead and cadmium on embryogenesis and early larval growth of the *Paracentrotus lividus* sea-urchin. *Ecotoxicology (London, England)*. 2001;10(5):263-71.

Ferreira JLR, Lonne MN, Franca TA, Maximilla NR, Lugokenski TH, Costa PG, et al. Co-exposure of the organic nanomaterial fullerene C₆₀ with benzo(a)pyrene in *Danio rerio* (zebrafish) hepatocytes: evidence of toxicological interactions. *Aquatic toxicology (Amsterdam, Netherlands)*. 2014;147:76-83.

Ficheux AS, Sibiril Y, Parent-Massin D. Co-exposure of *Fusarium* mycotoxins: in vitro myelotoxicity assessment on human hematopoietic progenitors. *Toxicon : official journal of the International Society on Toxinology*. 2012;60(6):1171-9.

Filippova LG, Buldakov LA, Nifatov AP. Carcinogenic effects of combined exposure to 241Am and gamma-radiation. *Radiobiologiia*. 1984;24(5):675-8.

Fischer C, Fredriksson A, Eriksson P. Neonatal co-exposure to low doses of an ortho-PCB (PCB 153) and methyl mercury exacerbate defective developmental neurobehavior in mice. *Toxicology*. 2008;244(2-3):157-65.

Fischer JM, Robbins SB, Al-Zoughool M, Kannamkumarath SS, Stringer SL, Larson JS, et al. Co-mutagenic activity of arsenic and benzo(a)pyrene in mouse skin. *Mutation research*. 2005;588(1):35-46.

Fisher PA, Lester BM, DeGarmo DS, Lagasse LL, Lin H, Shankaran S, et al. The combined effects of prenatal drug exposure and early adversity on neurobehavioral disinhibition in childhood and adolescence. *Development and psychopathology*. 2011;23(3):777-88.

Flaks A, Hamilton JM, Clayson DB, Burch PR. The combined effect of radiation and chemical carcinogens in female A X IF mice. *British journal of cancer*. 1973;28(3):227-31.

Flint MS, Hood BL, Sun M, Stewart NA, Jones-Laughner J, Conrads TP. Proteomic analysis of the murine liver in response to a combined exposure to psychological stress and 7,12-dimethylbenz(a)anthracene. *Journal of proteome research*. 2010;9(1):509-20.

Flodgren P, Sjogren HO. Influence in vitro on NK and K cell activities by cimetidine and indomethacin with and without simultaneous exposure to interferon. *Cancer immunology, immunotherapy* : CII. 1985;19(1):28-34.

Flora SJ, Dhawan M, Tandon SK. Effects of combined exposure to aluminium and ethanol on aluminium body burden and some neuronal, hepatic and haematopoietic biochemical variables in the rat. *Human & experimental toxicology*. 1991;10(1):45-8.

Flora SJ, Kumar D, Sachan SR, Das Gupta S. Combined exposure to lead and ethanol on tissue concentration of essential metals and some biochemical indices in rat. *Biological trace element research*. 1991;28(2):157-64.

Flora SJ, Tandon SK. Effect of combined exposure to cadmium and ethanol on regional brain biogenic amine levels in the rat. *Biochemistry international*. 1987;15(4):863-71.

Flora SJ, Tandon SK. Effect of combined exposure to lead and ethanol on some biochemical indices in the rat. *Biochemical pharmacology*. 1987;36(4):537-41.

Flora SJS, Gautam P, Kushwaha P. Lead and ethanol co-exposure lead to blood oxidative stress and subsequent neuronal apoptosis in rats. *Alcohol and alcoholism (Oxford, Oxfordshire)*. 2012;47(2):92-101.

Flora SJS, Mittal M, Mishra D. Co-exposure to arsenic and fluoride on oxidative stress, glutathione linked enzymes, biogenic amines and DNA damage in mouse brain. *Journal of the neurological sciences*. 2009;285(1-2):198-205.

Florek E, Ignatowicz E, Nowakowska A, Piekoszewski W, Kulza M, Saija A, et al. Effect of combined exposure to ethanol and tobacco smoke on lipid peroxidation in rats. *Przegląd lekarski*. 2009;66(10):655-9.

Folzenlogen D. A case of atorvastatin combined toxic myopathy and inflammatory myositis. *Journal of clinical rheumatology : practical reports on rheumatic & musculoskeletal diseases*. 2001;7(5):340-5.

Formicki G, Stawarz R, Lukac N, Putala A, Kuczkowska A. Combined effects of cadmium and ultraviolet radiation on mortality and mineral content in common frog (*Rana temporaria*) larvae. *Journal of environmental science and health Part A, Toxic/hazardous substances & environmental engineering*. 2008;43(10):1174-83.

Forrence E, Covinsky JO, Mullen C. A seizure induced by concurrent lidocaine-tocainide therapy--is it just a case of additive toxicity? *Drug intelligence & clinical pharmacy*. 1986;20(1):56-9.

Frappier-Davignon L, Jegier S, Drouin C, Marier J, Roy LP, Tourangeau FJ. Combined effect of air pollution, occupational exposure and tobacco habits in obstructive lung diseases. I. Methodology. *L'union medicale du Canada*. 1973;102(7):1537-41.

Frappier-Davignon L, Saint-Pierre J. Combined effect of atmospheric pollution, occupational exposure, and tobacco habits in obstructive lung diseases. 3. Effects of occupational exposure. *L'union medicale du Canada*. 1975;104(5):755-62.

Frappier-Davignon L, St-Pierre J. Combined effect of air pollution, occupational exposure, and tobacco habits in obstructive lung diseases. II. Food processing firm: no occupational exposure. *L'union medicale du Canada*. 1973;102(7):1542-6.

Freidig A, Hofhuis M, Van Holstijn I, Hermens J. Glutathione depletion in rat hepatocytes: a mixture toxicity study with alpha, beta-unsaturated esters. *Xenobiotica; the fate of foreign compounds in biological systems*. 2001;31(5):295-307.

Freundt KJ, Romer KG, Federsel RJ. Decrease of inhaled toluene, ethyl benzene, m-xylene, or mesitylene in rat blood after combined exposure to ethyl acetate. *Bulletin of environmental contamination and toxicology*. 1989;42(4):495-8.

Fujiwara Y, Watanabe S, Sakamoto M, Kaji T. Repair of wounded monolayers of cultured vascular endothelial cells after simultaneous exposure to lead and zinc. *Toxicology letters*. 1998;94(3):181-8.

Fukazawa H, Matsushita H, Terao Y. Identification of co-mutagenic chlorinated harmans in final effluent from a sewage treatment plant. *Mutation research*. 2001;491(1-2):65-70.

Fukunaga M, Yielding KL. Co-mutagenic effects of propidium on petite induction by ethidium in *Saccharomyces cerevisiae*. *Mutation research*. 1980;69(1):43-50.

Fukushima S, Inoue T, Uwagawa S, Shibata MA, Ito N. Co-carcinogenic effects of NaHCO₃ on o-phenylphenol-induced rat bladder carcinogenesis. *Carcinogenesis*. 1989;10(9):1635-40.

Furusawa Y, Aoki M, Durante M. Simultaneous exposure of mammalian cells to heavy ions and X-rays. *Advances in space research : the official journal of the Committee on Space Research (COSPAR)*. 2002;30(4):877-84.

Gabelova A, Polakova V, Prochazka G, Kretova M, Poloncova K, Regendova E, et al. Sustained induction of cytochrome P4501A1 in human hepatoma cells by co-exposure to benzo a pyrene and 7H-dibenzo c,g carbazole underlies the synergistic effects on DNA adduct formation. *Toxicology and applied pharmacology*. 2013;271(1):1-12.

Gagan EM, Hull MW, Schultz TW, Poch G, Dawson DA. Time dependence in mixture toxicity with soft electrophiles: 1. Combined effects of selected SN₂- and SN_{Ar}-reactive agents with a nonpolar narcotic. *Archives of environmental contamination and toxicology*. 2007;52(3):283-93.

Gagnaire F, Simon P, Bonnet P, De Ceaurriz J. The influence of simultaneous exposure to carbon disulfide and hydrogen sulfide on the peripheral nerve toxicity and metabolism of carbon disulfide in rats. *Toxicology letters*. 1986;34(2-3):175-83.

Gajowik A, Radzikowska J, Dobrzynska M. The influence of bisphenol A and of combined exposure to X-rays and bisphenol A to somatic cells of the bone marrow and liver of mice. *Roczniki Panstwowego Zakladu Higieny*. 2011;62(4):439-44.

Gama-Flores JL, Sarma SSS, Nandini S. Combined effects of exposure time and copper toxicity on the demography of *Moina macrocopa* (Crustacea: Cladocera). *Journal of environmental science and health Part B, Pesticides, food contaminants, and agricultural wastes*. 2009;44(1):86-93.

Ganesan S, Comstock AT, Kinker B, Mancuso P, Beck JM, Sajjan US. Combined exposure to cigarette smoke and nontypeable *Haemophilus influenzae* drives development of a COPD phenotype in mice. *Respiratory research*. 2014;15:11.

Ganier O, Bocquet S, Peiffer I, Brochard V, Arnaud P, Puy A, et al. Synergic reprogramming of mammalian cells by combined exposure to mitotic *Xenopus* egg extracts and transcription factors. *Proceedings of the National Academy of Sciences of the United States of America*. 2011;108(42):17331-6.

Gantchev TG, Brasseur N, van Lier JE. Combination toxicity of etoposide (VP-16) and photosensitisation with a water-soluble aluminium phthalocyanine in K562 human leukaemic cells. *British journal of cancer*. 1996;74(10):1570-7.

Gardner HS, Jr., Brennan LM, Toussaint MW, Rosencrance AB, Boncavage-Hennessey EM, Wolfe MJ. Environmental complex mixture toxicity assessment. *Environmental health perspectives*. 1998;106 Suppl 6:1299-305.

Gargouri I, Khadhraoui M, Nisse C, Leroyer A, Masmoudi ML, Frimat P, et al. A case study on co-exposure to a mixture of organic solvents in a Tunisian adhesive-producing company. *Journal of occupational medicine and toxicology (London, England)*. 2011;6:28.

Garlantezec R, Chevrier C, Coiffec I, Celebi C, Cordier S. Combined effect of prenatal solvent exposure and GSTT1 or GSTM1 polymorphisms in the risk of birth defects. *Birth defects research Part A, Clinical and molecular teratology*. 2012;94(6):481-5.

Gelormini A, Cidaria D. Management of combined exposure to chemical agents: an operative proposal. *Giornale italiano di medicina del lavoro ed ergonomia*. 2003;25(3):348-9.

Genter EI, Mikhel'son VM, Zhestianikov VD. Unscheduled DNA synthesis in human peripheral blood lymphocytes undergoing combined exposure to gamma irradiation and methylmethane sulfonate. *Tsitologiya*. 1986;28(10):1091-6.

Genthe B, Le Roux WJ, Schachtschneider K, Oberholster PJ, Aneck-Hahn NH, Chamier J. Health risk implications from simultaneous exposure to multiple environmental contaminants. *Ecotoxicology and environmental safety*. 2013;93:171-9.

Genuneit J, Strachan DP, Buchele G, Weber J, Loss G, Sozanska B, et al. The combined effects of family size and farm exposure on childhood hay fever and atopy. *Pediatric allergy and immunology : official publication of the European Society of Pediatric Allergy and Immunology*. 2013;24(3):293-8.

George TK, Liber K, Solomon KR, Sibley PK. Assessment of the probabilistic ecological risk assessment-toxic equivalent combination approach for evaluating pesticide mixture toxicity to zooplankton in outdoor microcosms. *Archives of environmental contamination and toxicology*. 2003;45(4):453-61.

Ghiani A, Fumagalli P, Nguyen Van T, Gentili R, Citterio S. The combined toxic and genotoxic effects of Cd and As to plant bioindicator *Trifolium repens* L. *PloS one*. 2014;9(6):e99239.

Gibbons SI, Adams WC. Combined effects of ozone exposure and ambient heat on exercising females. *Journal of applied physiology: respiratory, environmental and exercise physiology*. 1984;57(2):450-6.

Gibel W, Gummel H. On the occurrence of plant carcinogenic and co-carcinogenic substances in human environment. *Das Deutsche Gesundheitswesen*. 1967;22(21):980-5.

Gill TS, Pande J, Tewari H. Individual and combined toxicity of common pesticides to teleost *Puntius conchonus* Hamilton. *Indian journal of experimental biology*. 1991;29(2):145-8.

Giroir LE, Huff WE, Kubena LF, Harvey RB, Elissalde MH, Witzel DA, et al. The individual and combined toxicity of kojic acid and aflatoxin in broiler chickens. *Poultry science*. 1991;70(6):1351-6.

Glasmacher UA, Lang M, Keppler H, Langenhorst F, Neumann R, Schardt D, et al. Phase transitions in solids stimulated by simultaneous exposure to high pressure and relativistic heavy ions. *Physical review letters*. 2006;96(19):195701.

Glaviano A, Mothersill C, Case CP, Rubio MA, Newson R, Lyng F. Effects of hTERT on genomic instability caused by either metal or radiation or combined exposure. *Mutagenesis*. 2009;24(1):25-33.

Goel K, Thomas RJ, Squires RW, Coutinho T, Trejo-Gutierrez JF, Somers VK, et al. Combined effect of cardiorespiratory fitness and adiposity on mortality in patients with coronary artery disease. *American heart journal*. 2011;161(3):590-7.

Goldoni M, Tagliaferri S. Dose-response or dose-effect curves in in vitro experiments and their use to study combined effects of neurotoxicants. *Methods in molecular biology (Clifton, NJ)*. 2011;758:415-34.

Goldstein BD. Combined exposure to ozone and nitrogen dioxide. *Environmental health perspectives*. 1976;13:107-10.

Goldstein BD. Combined exposure to ozone and nitrogen dioxide. *Environmental health perspectives*. 1979;30:87-9.

- Gombojav B, Yi S-W, Sull JW, Nam CM, Ohrr H. Combined effects of cognitive impairment and hypertension on total mortality in elderly people: the Kangwha Cohort study. *Gerontology*. 2011;57(6):490-6.
- Gomez-Eyles JL, Svendsen C, Lister L, Martin H, Hodson ME, Spurgeon DJ. Measuring and modelling mixture toxicity of imidacloprid and thiacloprid on *Caenorhabditis elegans* and *Eisenia fetida*. *Ecotoxicology and environmental safety*. 2009;72(1):71-9.
- Gorshinskaia IA, Grabovskova LL, Bronovitskaia ZG, Krichevskaja AA. Monoamine oxidase activity in the brain during adaptation to cold and simultaneous exposure to cold and hyperbaric oxygenation. *Fiziologicheskii zhurnal SSSR imeni I M Sechenova*. 1981;67(11):1611-6.
- Grabowska T, Skowronek R, Nowicka J, Sybirska H. Prevalence of hydrogen cyanide and carboxyhaemoglobin in victims of smoke inhalation during enclosed-space fires: a combined toxicological risk. *Clinical toxicology (Philadelphia, Pa)*. 2012;50(8):759-63.
- Graeve K. Technic of angiocardigraphy; direct large scale procedure with simultaneous exposures in 2 planes. *Fortschritte auf dem Gebiete der Rontgenstrahlen und der Nuklearmedizin*. 1956;85(6):754-8.
- Grant S, Traylor R, Bhalla K, McCrady C, Pettit GR. Effect of a combined exposure to cytosine arabinoside, bryostatin 1, and recombinant granulocyte-macrophage colony-stimulating factor on the clonogenic growth in vitro of normal and leukemic human hematopoietic progenitor cells. *Leukemia*. 1992;6(5):432-9.
- Green T, Toghiani A, Moore R. The influence of co-exposure to dimethyldithiocarbamate on butadiene metabolism. *Chemico-biological interactions*. 2001;135-136:585-98.
- Greenblatt M, Raha C, Roe C. Dimethylnitrosamine and hydrazine sulfate. An analysis of combined toxicity and pathology in mice. *Archives of environmental health*. 1968;17(3):315-20.
- Gregorio V, Chevre N, Junghans M. Critical issues in using the common mixture toxicity models concentration addition or response addition on species sensitivity distributions: a theoretical approach. *Environmental toxicology and chemistry*. 2013;32(10):2387-95.
- Groll-Knapp E, Haider M, Kienzl K, Handler A, Trimmel M. Changes in discrimination learning and brain activity (ERP's) due to combined exposure to NO and CO in rats. *Toxicology*. 1988;49(2-3):441-7.
- Groten JP, Schoen ED, Feron VJ. Use of factorial designs in combination toxicity studies. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1996;34(11-12):1083-9.
- Groves MD, Puduvalli VK, Conrad CA, Gilbert MR, Yung WKA, Jaeckle K, et al. Phase II trial of temozolomide plus marimastat for recurrent anaplastic gliomas: a relationship among efficacy, joint toxicity and anticonvulsant status. *Journal of neuro-oncology*. 2006;80(1):83-90.
- Gruber CM, Jr. Combined toxicity of morphine sulfate, nalorphine hydrochloride, and levallorphan tartrate. *Archives internationales de pharmacodynamie et de therapie*. 1955;103(4):489-94.
- Gulverdashvili NA. Changes in the clonogenic ability of solid tumor cells during combined exposure to hyperthermia and irradiation. *Radiobiologia*. 1987;27(5):640-3.
- Gunawickrama SHNP, Aarsaether N, Orbea A, Cajaraville MP, Goksoyr A. PCB77 (3,3',4,4'-tetrachlorobiphenyl) co-exposure prolongs CYP1A induction, and sustains oxidative stress in B(a)P-exposed turbot, *Scophthalmus maximus*, in a long-term study. *Aquatic toxicology (Amsterdam, Netherlands)*. 2008;89(2):65-74.
- Guo B, Zebda R, Drake SJ, Sayes CM. Synergistic effect of co-exposure to carbon black and Fe₂O₃ nanoparticles on oxidative stress in cultured lung epithelial cells. *Particle and fibre toxicology*. 2009;6:4.

- Guo TR, Zhang GP, Zhang YH. Physiological changes in barley plants under combined toxicity of aluminum, copper and cadmium. *Colloids and surfaces B, Biointerfaces*. 2007;57(2):182-8.
- Gupta MS, Malik A. Combined toxicity due to alcohol and aluminium phosphide. *The Journal of the Association of Physicians of India*. 1995;43(1):74.
- Gust KA. Joint toxicity of cadmium and phenanthrene in the freshwater amphipod *Hyalella azteca*. *Archives of environmental contamination and toxicology*. 2006;50(1):7-13.
- Gvenetadze RO, Alekhina SM. Changes in the nicotinamide coenzyme content of the liver of rats with combined exposure to kelthane and phosphamide. *Gigiena i sanitariia*. 1984(2):75-6.
- Gwynn RH, Salaman MH. Studies on co-carcinogenesis. SH-reactors and other substances tested for co-carcinogenic action in mouse skin. *British journal of cancer*. 1953;7(4):482-9.
- Haberstroh KM, Kaefer M, DePaola N, Frommer SA, Bizios R. A novel in-vitro system for the simultaneous exposure of bladder smooth muscle cells to mechanical strain and sustained hydrostatic pressure. *Journal of biomechanical engineering*. 2002;124(2):208-13.
- Hall CE, Hall O. Augmentation of hormone-induced hypertensive cardiovascular disease by simultaneous exposure to stress. *Acta endocrinologica*. 1959;30(4):557-66.
- Halldin K, Axelsson J, Brunstrom B. Embryonic co-exposure to methoxychlor and Clophen A50 alters sexual behavior in adult male quail. *Archives of toxicology*. 2005;79(4):237-42.
- Hambach R, Lison D, D'Haese PC, Weyler J, De Graef E, De Schryver A, et al. Co-exposure to lead increases the renal response to low levels of cadmium in metallurgy workers. *Toxicology letters*. 2013;222(2):233-8.
- Hampar B, Boyd AL. Interaction of oncornaviruses and herpesviruses: a hypothesis proposing a co-carcinogenic role for herpesviruses in transformation--a review. *IARC scientific publications*. 1978(24 Pt 2):583-9.
- Han A, Elkind MM. Enhanced killing of Chinese hamster cells following combined exposure to 'sunlight' and x-rays. *Photochemistry and photobiology*. 1980;31(3):281-5.
- Han P, Kurland AR, Giordano AN, Nanayakkara SU, Blake MM, Pochas CM, et al. Heads and tails: simultaneous exposed and buried interface imaging of monolayers. *ACS nano*. 2009;3(10):3115-21.
- Han SG, Andrews R, Gairola CG, Bhalla DK. Acute pulmonary effects of combined exposure to carbon nanotubes and ozone in mice. *Inhalation toxicology*. 2008;20(4):391-8.
- Hannam ML, Bamber SD, Galloway TS, John Moody A, Jones MB. Functional immune response in *Pecten maximus*: combined effects of a pathogen-associated molecular pattern and PAH exposure. *Fish & shellfish immunology*. 2010;28(1):249-52.
- Hannan MA, Recio L, Deluca PP, Enoch H. Co-mutagenic effects of 2-aminoanthracene and cigarette smoke condensate on smoker's urine in the Ames Salmonella assay system. *Cancer letters*. 1981;13(3):203-12.
- Hanson ML, Sibley PK, Mabury SA, Solomon KR, Muir DCG. Trichloroacetic acid (TCA) and trifluoroacetic acid (TFA) mixture toxicity to the macrophytes *Myriophyllum spicatum* and *Myriophyllum sibiricum* in aquatic microcosms. *The Science of the total environment*. 2002;285(1-3):247-59.
- Hapeienko DD, Lavrenchuk HI, Asmol'kova VS, Oksamytnyi VN. Features of biological effects in cell culture in the combined exposure to ionizing radiation and copper ions. *Problemy radiatsiinoi medytsyny ta radiobiologii*. 2014;19:398-406.
- Hapeienko DD. Features of cellular effects of combined exposure to ionizing radiation and copper ions. *Problemy radiatsiinoi medytsyny ta radiobiologii*. 2013(18):305-12.

Hardy ML, Stedeford T. Developmental neurotoxicity in neonatal mice following co-exposure to PCB 153 and methyl mercury: interaction or false positive? *Toxicology*. 2008;248(2-3):160-1; author reply 2-3.

Harreus UA, Baumeister P, Wallner BC, Berghaus A, Kleinsasser NH. Carcinogenic and co-carcinogenic effects of metals and ethanol on human salivary gland tissue. *Hno*. 2005;53(2):155-62.

Hart CL, Davey Smith G, Gruer L, Watt GCM. The combined effect of smoking tobacco and drinking alcohol on cause-specific mortality: a 30 year cohort study. *BMC public health*. 2010;10:789.

Hart CM, Tolson JK, Block ER. Quantitative fatty acid analyses in cultured porcine pulmonary artery endothelial cells: the combined effects of fatty acid supplementation and oxidant exposure. *Journal of cellular physiology*. 1992;153(1):76-87.

Hasegawa R, Takahashi M, Furukawa F, Toyoda K, Sato H, Hayashi Y. Co-carcinogenic effect of retinyl acetate on forestomach carcinogenesis of male F344 rats induced with butylated hydroxyanisole. *Japanese journal of cancer research : Gann*. 1988;79(3):320-8.

Hashemi S, Blust R, De Boeck G. Combined effects of different food rations and sublethal copper exposure on growth and energy metabolism in common carp. *Archives of environmental contamination and toxicology*. 2008;54(2):318-24.

Hass U, Scholze M, Christiansen S, Dalgaard M, Vinggaard AM, Axelstad M, et al. Combined exposure to anti-androgens exacerbates disruption of sexual differentiation in the rat. *Environmental health perspectives*. 2007;115 Suppl 1:122-8.

Hassold E, Backhaus T. The predictability of mixture toxicity of demethylase inhibiting fungicides to *Daphnia magna* depends on life-cycle parameters. *Aquatic toxicology (Amsterdam, Netherlands)*. 2014;152:205-14.

Hatoum NS, Davis WM, Elsohly MA, Turner CE. Perinatal exposure to cannabichromene and delta 9-tetrahydrocannabinol: separate and combined effects on viability of pups and on male reproductive system at maturity. *Toxicology letters*. 1981;8(3):141-6.

He F, Chen S, Tang X, Gan W, Tao B, Wen B. Biological monitoring of combined exposure to organophosphates and pyrethroids. *Toxicology letters*. 2002;134(1-3):119-24.

He H, Chen G, Yu J, He J, Huang X, Li S, et al. Individual and joint toxicity of three chloroacetanilide herbicides to freshwater cladoceran *Daphnia carinata*. *Bulletin of environmental contamination and toxicology*. 2013;90(3):344-50.

He M, Ichinose T, Yoshida S, Takano H, Nishikawa M, Sun G, et al. Induction of immune tolerance and reduction of aggravated lung eosinophilia by co-exposure to Asian sand dust and ovalbumin for 14 weeks in mice. *Allergy, asthma, and clinical immunology : official journal of the Canadian Society of Allergy and Clinical Immunology*. 2013;9(1):19.

He Y, Lam TH, Jiang B, Wang J, Sai X, Fan L, et al. Combined effects of tobacco smoke exposure and metabolic syndrome on cardiovascular risk in older residents of China. *Journal of the American College of Cardiology*. 2009;53(4):363-71.

Health effects of combined exposures in the work environment. Report of a WHO expert committee. World Health Organization technical report series. 1981;662:1-76.

Heffernan J, Mineau P, Falk R, Wickstrom M. Combined effect of short-term dehydration and sublethal acute oral dicrotophos exposure confounds the diagnosis of anticholinesterase exposure in common quail (*Coturnix coturnix*) using plasma cholinesterase activity. *Journal of wildlife diseases*. 2012;48(3):695-706.

Hegaret H, Smolowitz RM, Sunila I, Shumway SE, Alix J, Dixon M, et al. Combined effects of a parasite, QPX, and the harmful-alga, *Prorocentrum minimum* on northern quahogs, *Mercenaria mercenaria*. *Marine environmental research*. 2010;69(5):337-44.

Hengstler JG, Bolm-Audorff U, Faldum A, Janssen K, Reifenrath M, Gotte W, et al. Occupational exposure to heavy metals: DNA damage induction and DNA repair inhibition prove co-exposures to cadmium, cobalt and lead as more dangerous than hitherto expected. *Carcinogenesis*. 2003;24(1):63-73.

Hennes EC, Galay Burgos M, Hamer M, Pemberton M, Travis K, Rodriguez C. Workshop: combined exposure to chemicals. *Regulatory toxicology and pharmacology : RTP*. 2012;63(1):53-4.

Henschler D, Bolt HM, Jonker D, Pieters MN, Groten JP. Experimental designs and risk assessment in combination toxicology: panel discussion. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1996;34(11-12):1183-5.

Herbert FA, Hessel PA, Melenka LS, Yoshida K, Nakaza M. Pulmonary effects of simultaneous exposures to MDI formaldehyde and wood dust on workers in an oriented strand board plant. *Journal of occupational and environmental medicine*. 1995;37(4):461-5.

Hermens J, Busser F, Leeuwangh P, Musch A. Quantitative structure-activity relationships and mixture toxicity of organic chemicals in *Photobacterium phosphoreum*: the Microtox test. *Ecotoxicology and environmental safety*. 1985;9(1):17-25.

Hermens J, Leeuwangh P, Musch A. Joint toxicity of mixtures of groups of organic aquatic pollutants to the guppy (*Poecilia reticulata*). *Ecotoxicology and environmental safety*. 1985;9(3):321-6.

Hermens J, Leeuwangh P, Musch A. Quantitative structure-activity relationships and mixture toxicity studies of chloro- and alkylanilines at an acute lethal toxicity level to the guppy (*Poecilia reticulata*). *Ecotoxicology and environmental safety*. 1984;8(4):388-94.

Hermens J, Leeuwangh P. Joint toxicity of mixtures of 8 and 24 chemicals to the guppy (*Poecilia reticulata*). *Ecotoxicology and environmental safety*. 1982;6(3):302-10.

Hernando MD, Ejerhoon M, Fernandez-Alba AR, Chisti Y. Combined toxicity effects of MTBE and pesticides measured with *Vibrio fischeri* and *Daphnia magna* bioassays. *Water research*. 2003;37(17):4091-8.

Herraiz T. Tetrahydro-beta-carboline-3-carboxylic acid compounds in fish and meat: possible precursors of co-mutagenic beta-carbolines norharman and harman in cooked foods. *Food additives and contaminants*. 2000;17(10):859-66.

Hersoug L-G, Arnau J. A built-in co-carcinogenic effect due to viruses involved in latent or persistent infections. *Medical hypotheses*. 2007;68(5):1001-8.

Hertel S, Schwaninger M, Helmchen C. Combined toxicity of penicillin and aspirin therapy may elicit bilateral vestibulopathy. *Clinical neurology and neurosurgery*. 2013;115(7):1114-6.

Hicks RM, Wakefield JS, Chowaniec J. Letter: Co-carcinogenic action of saccharin in the chemical induction of bladder cancer. *Nature*. 1973;243(5406):347-9.

Hildebrand J, Kenis Y. Additive toxicity of vincristine and other drugs for the peripheral nervous system. Three case reports. *Acta neurologica Belgica*. 1971;71(6):486-91.

Hirano S, Kakinuma S, Amasaki Y, Nishimura M, Imaoka T, Fujimoto S, et al. Ikaros is a critical target during simultaneous exposure to X-rays and N-ethyl-N-nitrosourea in mouse T-cell lymphomagenesis. *International journal of cancer*. 2013;132(2):259-68.

Hnizdo E, Baskind E, Sluis-Cremer GK. Combined effect of silica dust exposure and tobacco smoking on the prevalence of respiratory impairments among gold miners. *Scandinavian journal of work, environment & health*. 1990;16(6):411-22.

Hnizdo E. Combined effect of silica dust and tobacco smoking on mortality from chronic obstructive lung disease in gold miners. *British journal of industrial medicine*. 1990;47(10):656-64.

Hodges G, Roberts DW, Marshall SJ, Dearden JC. Defining the toxic mode of action of ester sulphonates using the joint toxicity of mixtures. *Chemosphere*. 2006;64(1):17-25.

Hofer T, Pohjanvirta R, Spielmann P, Viluksela M, Buchmann DP, Wenger RH, et al. Simultaneous exposure of rats to dioxin and carbon monoxide reduces the xenobiotic but not the hypoxic response. *Biological chemistry*. 2004;385(3-4):291-4.

Hong F, Jin T, Zhang A. Risk assessment on renal dysfunction caused by co-exposure to arsenic and cadmium using benchmark dose calculation in a Chinese population. *Biometals : an international journal on the role of metal ions in biology, biochemistry, and medicine*. 2004;17(5):573-80.

Hori M. 20-methylcholanthrene-induced mice skin cancer: Part 3: Studies on co-carcinogenic and suppressive factors (author's transl). *Nihon Hifuka Gakkai zasshi The Japanese journal of dermatology*. 1981;91(1):43-52.

Hotta S, Sugisawa T, Matsui T, Itoh T, Yamamura K. Combined effects of acute lead acetate exposure and tone exposure of the guinea pig cochlea. *European archives of oto-rhino-laryngology : official journal of the European Federation of Oto-Rhino-Laryngological Societies (EUFOS) : affiliated with the German Society for Oto-Rhino-Laryngology - Head and Neck Surgery*. 1996;253(8):488-93.

Hsieh S-H, Tsai K-P, Chen C-Y. The combined toxic effects of nonpolar narcotic chemicals to *Pseudokirchneriella subcapitata*. *Water research*. 2006;40(10):1957-64.

Huang H, Wang X, Shao Y, Chen D, Dai X, Wang L. QSAR for prediction of joint toxicity of substituted phenols to tadpoles (*Rana japonica*). *Bulletin of environmental contamination and toxicology*. 2003;71(6):1124-30.

Huang WY, Liu F, Liu SS, Ge HL, Chen HH. Predicting mixture toxicity of seven phenolic compounds with similar and dissimilar action mechanisms to *Vibrio qinghaiensis* sp.nov.Q67. *Ecotoxicology and environmental safety*. 2011;74(6):1600-6.

Huang Y, Hu Y, Liu Y. Combined toxicity of copper and cadmium to six rice genotypes (*Oryza sativa* L.). *Journal of environmental sciences (China)*. 2009;21(5):647-53.

Hubbs-Tait L, Nation JR, Krebs NF, Bellinger DC. Neurotoxicants, Micronutrients, and Social Environments: Individual and Combined Effects on Children's Development. *Psychological science in the public interest : a journal of the American Psychological Society*. 2005;6(3):57-121.

Huff WE, Kubena LF, Harvey RB, Phillips TD. Efficacy of hydrated sodium calcium aluminosilicate to reduce the individual and combined toxicity of aflatoxin and ochratoxin A. *Poultry science*. 1992;71(1):64-9.

Huttunen K, Pelkonen J, Nielsen KF, Nuutinen U, Jussila J, Hirvonen M-R. Synergistic interaction in simultaneous exposure to *Streptomyces californicus* and *Stachybotrys chartarum*. *Environmental health perspectives*. 2004;112(6):659-65.

Ichihara G, Saito I, Kamijima M, Yu X, Shibata E, Toida M, et al. Urinary 2,5-hexanedione increases with potentiation of neurotoxicity in chronic coexposure to n-hexane and methyl ethyl ketone. *International archives of occupational and environmental health*. 1998;71(2):100-4.

Ichinose T, Sagai M. Combined exposure to NO₂, O₃ and H₂SO₄-aerosol and lung tumor formation in rats. *Toxicology*. 1992;74(2-3):173-84.

Ikeda M, Koizumi A, Kasahara M, Fujita H. Combined effects of n-hexane and toluene on norepinephrine and dopamine levels in rat brain tissues after long-term exposures. *Bulletin of environmental contamination and toxicology*. 1986;36(4):510-7.

- Inamura K, Ninomiya H, Nomura K, Tsuchiya E, Satoh Y, Okumura S, et al. Combined effects of asbestos and cigarette smoke on the development of lung adenocarcinoma: different carcinogens may cause different genomic changes. *Oncology reports*. 2014;32(2):475-82.
- Ingel FI, Bodiagin DA, Pereverzeva ER, Revazova IA. Pathophysiological effects of combined exposure to emotional stress and cyclophosphamide. *Biulleten' eksperimental'noi biologii i meditsiny*. 1997;123(5):506-9.
- Inkielewicz-Stepniak I, Santos-Martinez MJ, Medina C, Radomski MW. Pharmacological and toxicological effects of co-exposure of human gingival fibroblasts to silver nanoparticles and sodium fluoride. *International journal of nanomedicine*. 2014;9:1677-87.
- Institoris L, Kovacs D, Kecskemeti-Kovacs I, Lukacs A, Szabo A, Lengyel Z, et al. Immunotoxicological investigation of subacute combined exposure with low doses of Pb, Hg and Cd in rats. *Acta biologica Hungarica*. 2006;57(4):433-9.
- Institoris L, Papp A, Siroki O, Banerjee BD. Comparative investigation of behavioral, neurotoxicological, and immunotoxicological indices in detection of subacute combined exposure with methyl parathion and propoxur in rats. *Ecotoxicology and environmental safety*. 2004;57(3):270-7.
- Institoris L, Siroki O, Desi I, Undeger U. Immunotoxicological examination of repeated dose combined exposure by dimethoate and two heavy metals in rats. *Human & experimental toxicology*. 1999;18(2):88-94.
- Institoris L, Siroki O, Undeger U, Basaran N, Desi I. Immunotoxicological investigation of subacute combined exposure by permethrin and the heavy metals arsenic(III) and mercury(II) in rats. *International immunopharmacology*. 2001;1(5):925-33.
- Institoris L, Siroki O, Undeger U, Desi I, Nagymajtenyi L. Immunotoxicological effects of repeated combined exposure by cypermethrin and the heavy metals lead and cadmium in rats. *International journal of immunopharmacology*. 1999;21(11):735-43.
- Ird EA, Smirnova IO. Mammary tumors in female rats with combined exposure to nitrosoethylurea and sex hormones. *Voprosy onkologii*. 1981;27(12):43-6.
- Ishaque AB, Johnson L, Gerald T, Boucaud D, Okoh J, Tchounwou PB. Assessment of individual and combined toxicities of four non-essential metals (As, Cd, Hg and Pb) in the microtox assay. *International journal of environmental research and public health*. 2006;3(1):118-20.
- Ishidate M. COMBINED EFFECT OF CARCINOGENS AND CO-CARCINOGENS ON METABOLIC PROCESS. *Acta - Unio Internationalis Contra Cancrum*. 1964;20:909-14.
- Islam Z, Amuzie CJ, Harkema JR, Pestka JJ. Neurotoxicity and inflammation in the nasal airways of mice exposed to the macrocyclic trichothecene mycotoxin roridin a: kinetics and potentiation by bacterial lipopolysaccharide coexposure. *Toxicological sciences : an official journal of the Society of Toxicology*. 2007;98(2):526-41.
- Iwata M, Takeuchi Y, Hisanaga N, Ono Y. Changes of n-hexane neurotoxicity and its urinary metabolites by long-term co-exposure with MEK or toluene. *International archives of occupational and environmental health*. 1984;54(4):273-81.
- Iyaniwura TT. Mammalian toxicity and combined exposure to pesticides. *Veterinary and human toxicology*. 1990;32(1):58-62.
- Iyaniwura TT. Pharmacological interaction and combined toxicity of exposure to environmental chemicals. *Reviews on environmental health*. 1989;8(1-4):165-70.
- Jacob CC, Reimschuessel R, Von Tungeln LS, Olson GR, Warbritton AR, Hattan DG, et al. Dose-response assessment of nephrotoxicity from a 7-day combined exposure to melamine and cyanuric acid in F344 rats. *Toxicological sciences : an official journal of the Society of Toxicology*. 2011;119(2):391-7.

Jacobsen PR, Christiansen S, Boberg J, Nellemann C, Hass U. Combined exposure to endocrine disrupting pesticides impairs parturition, causes pup mortality and affects sexual differentiation in rats. *International journal of andrology*. 2010;33(2):434-42.

Jager T, Gudmundsdottir EM, Cedergreen N. Dynamic modeling of sublethal mixture toxicity in the nematode *Caenorhabditis elegans*. *Environmental science & technology*. 2014;48(12):7026-33.

Jager T, Vandenbrouck T, Baas J, De Coen WM, Kooijman SALM. A biology-based approach for mixture toxicity of multiple endpoints over the life cycle. *Ecotoxicology (London, England)*. 2010;19(2):351-61.

Jain S, Rachamalla M, Kulkarni A, Kaur J, Tikoo K. Pulmonary fibrotic response to inhalation of ZnO nanoparticles and toluene co-exposure through directed flow nose only exposure chamber. *Inhalation toxicology*. 2013;25(13):703-13.

Jajte J, Stetkiewicz J, Wronska-Nofer T. Combined exposure to m-xylene and ethanol: oxidative stress in the rat liver. *International journal of occupational medicine and environmental health*. 2003;16(4):345-50.

Jakubowski M, Kostrzewski P. Excretion of methylbenzoic acid in urine as a result of single and combined exposure to m-xylene. *Polish journal of occupational medicine*. 1989;2(3):238-47.

Jensen FB, Koldkjaer P, Bach A. Anion uptake and acid-base and ionic effects during isolated and combined exposure to hypercapnia and nitrite in the freshwater crayfish, *Astacus astacus*. *Journal of comparative physiology B, Biochemical, systemic, and environmental physiology*. 2000;170(7):489-95.

Jensen J, Sverdrup LE. Joint toxicity of linear alkylbenzene sulfonates and pyrene on *Folsomia fimetaria*. *Ecotoxicology and environmental safety*. 2002;52(1):75-81.

Jho EH, An J, Nam K. Extended biotic ligand model for prediction of mixture toxicity of Cd and Pb using single metal toxicity data. *Environmental toxicology and chemistry*. 2011;30(7):1697-703.

Jiang E, Zhu L, Zhao Y, Zhao G, Bao L, Chen S, et al. Enhanced radiation damage in irradiated and non-irradiated bystander regions by co-exposure to myosmine. *Mutation research*. 2009;672(1):60-4.

Jin H, Wang C, Shi J, Chen L. Evaluation on joint toxicity of chlorinated anilines and cadmium to *Photobacterium phosphoreum* and QSAR analysis. *Journal of hazardous materials*. 2014;279:156-62.

Jin YB, Choi H-D, Kim BC, Pack J-K, Kim N, Lee Y-S. Effects of simultaneous combined exposure to CDMA and WCDMA electromagnetic fields on serum hormone levels in rats. *Journal of radiation research*. 2013;54(3):430-7.

Jin Y-B, Lee H-J, Seon Lee J, Pack J-K, Kim N, Lee Y-S. One-year, simultaneous combined exposure of CDMA and WCDMA radiofrequency electromagnetic fields to rats. *International journal of radiation biology*. 2011;87(4):416-23.

Jin YB, Pyun B-J, Jin H, Choi H-D, Pack J-K, Kim N, et al. Effects of simultaneous combined exposure to CDMA and WCDMA electromagnetic field on immune functions in rats. *International journal of radiation biology*. 2012;88(11):814-21.

Jin Z, Zong C, Jiang B, Zhou Z, Tong J, Cao Y. The effect of combined exposure of 900 MHz radiofrequency fields and doxorubicin in HL-60 cells. *PloS one*. 2012;7(9):e46102.

Jo H-J, Son J, Cho K, Jung J. Combined effects of water quality parameters on mixture toxicity of copper and chromium toward *Daphnia magna*. *Chemosphere*. 2010;81(10):1301-7.

Johansson A, Curstedt T, Jarstrand C, Camner P. Alveolar macrophages and lung lesions after combined exposure to nickel, cobalt, and trivalent chromium. *Environmental health perspectives*. 1992;97:215-9.

Johansson A, Curstedt T, Rasool O, Jarstrand C, Camner P. Rabbit lung after combined exposure to soluble cobalt and trivalent chromium. *Environmental research*. 1992;58(1):80-96.

Johansson A, Curstedt T, Robertson B, Camner P. Lung lesions after experimental combined exposure to nickel and trivalent chromium. *Environmental research*. 1989;50(1):103-19.

Johansson A, Wiernik A, Lundborg M, Jarstrand C, Camner P. Alveolar macrophages in rabbits after combined exposure to nickel and trivalent chromium. *Environmental research*. 1988;46(2):120-32.

Johnson JV, Hall EM, Theorell T. Combined effects of job strain and social isolation on cardiovascular disease morbidity and mortality in a random sample of the Swedish male working population. *Scandinavian journal of work, environment & health*. 1989;15(4):271-9.

Joly V, Bergeron Y, Bergeron MG, Carbon C. Endotoxin-tobramycin additive toxicity on renal proximal tubular cells in culture. *Antimicrobial agents and chemotherapy*. 1991;35(2):351-7.

Jorgensen L, Jenssen T, Heuch I, Jacobsen BK. The combined effect of albuminuria and inflammation on all-cause and cardiovascular mortality in nondiabetic persons. *Journal of internal medicine*. 2008;264(5):493-501.

Kabakova NM, Videnskii VG. Fast repair in diploid yeast cells after combined exposure to ionizing radiation with different LET. *Radiatsionnaia biologii, radioecologii*. 1994;34(3):336-41.

Kagan IS, Voitenko GA, Pan'shina TN, Voronina VM, Kokshareva NV. Combined toxicological and hygienic study of the organophosphate insecto-acaricide actellic. *Gigiena i sanitariia*. 1983(6):32-5.

Kaji T, Suzuki M, Yamamoto C, Mishima A, Sakamoto M, Kozuka H. Severe damage of cultured vascular endothelial cell monolayer after simultaneous exposure to cadmium and lead. *Archives of environmental contamination and toxicology*. 1995;28(2):168-72.

Kakei M, Sakae T, Yoshikawa M. Combined effects of estrogen deficiency and cadmium exposure on calcified hard tissues: animal model relating to itai-itai disease in postmenopausal women. *Proceedings of the Japan Academy Series B, Physical and biological sciences*. 2013;89(7):340-7.

Kakinuma S, Nishimura M, Amasaki Y, Takada M, Yamauchi K, Sudo S, et al. Combined exposure to X-irradiation followed by N-ethyl-N-nitrosourea treatment alters the frequency and spectrum of Ikaros point mutations in murine T-cell lymphoma. *Mutation research*. 2012;737(1-2):43-50.

Kakosy T, Horvath F. Appearance of the scalenus syndrome as a combined effect of a variation of the 1st rib and vibration damage. *Zeitschrift fur Orthopadie und ihre Grenzgebiete*. 1969;106(1):98-102.

Kal'chenko VA, Lotareva OV, Spirin DA, Karaban RT, Mal'tseva LN. Effects of combined exposure to gamma radiation and sulfur dioxide or N-methyl-N'-nitro-N-nitrosoguanidine on bacteria and higher plants. *Izvestiia Akademii nauk SSSR Serii biologicheskai*. 1988(6):908-14.

Kalina OV, Il'nitskaia AV. Formation of a protective cellular reaction of the respiratory tract after combined exposure to silicon dioxide and ozone. *Gigiena truda i professional'nye zabolvaniia*. 1984(12):29-33.

Kalversiep G, Hamacher J. Toxicity and combination toxicity of cardiac glycosides at an optimal molar titer and long survival time. *Naunyn-Schmiedebergs Archiv fur Pharmakologie*. 1970;266(4):366-7.

Kane CM, Pierce DR, Nyamweya NN, Yang H, Kasmi Y, Mosby R, et al. Nutritional factors modify the inhibition of CNS development by combined exposure to methadone and ethanol in neonatal rats. *Pharmacology, biochemistry, and behavior*. 1997;56(3):399-407.

Kappey F. THE EFFECT OF 2-BENZYLIMIDAZOLINE AND NORADRENALIN ON OXYGEN CONSUMPTION IN DOGS DURING SIMULTANEOUS EXPOSURE TO HEAT STRESS. *Arzneimittel-Forschung*. 1964;14:169-71.

Karakulov RK, Poverennyi AM, Ershov FI, Popov GA, Pelevina II. Effect of combined exposure to an interferon inducer, irradiation and 5-fluorouracil on sarcoma 37 in mice. *Voprosy onkologii*. 1984;30(2):69-76.

Kasparow AA. Various aspects of hygienic standardization in the complex and combined effects of chemical compounds and their combinations with other harmful environmental factors. *Medycyna pracy*. 1985;36(5):309-15.

Kavesh NG, Holzman RS, Seidlin M. The combined toxicity of azidothymidine and antimycobacterial agents. A retrospective study. *The American review of respiratory disease*. 1989;139(5):1094-7.

Kawaguchi I, Doi M, Kakinuma S, Shimada Y. Combined effect of multiple carcinogens and synergy index. *Journal of theoretical biology*. 2006;243(1):143-51.

Kawahara S, Hrai N, Arai M, Tatarazako N. The effect of in vivo co-exposure to estrone and AhR-ligands on estrogenic effect to vitellogenin production and EROD activity. *Environmental toxicology and pharmacology*. 2009;27(1):139-43.

Khoei S, Delfan S, Neshasteh-Riz A, Mahdavi SR. Evaluation of the Combined Effect of 2ME2 and (60)Co on the Inducement of DNA Damage by IUdR in a Spheroid Model of the U87MG Glioblastoma Cancer Cell Line Using Alkaline Comet Assay. *Cell journal*. 2011;13(2):83-90.

Kiefer F, Wiebel FJ. V79 Chinese hamster cells express cytochrome P-450 activity after simultaneous exposure to polycyclic aromatic hydrocarbons and aminophylline. *Toxicology letters*. 1989;48(3):265-73.

Kienast K, Riechelmann H, Knorst M, Haffner B, Muller-Quernheim J, Schellenberg J, et al. Combined exposures of human ciliated cells to different concentrations of sulfur dioxide and nitrogen dioxide. *European journal of medical research*. 1996;1(11):533-6.

Kilian E, Delpont R, Bornman MS, de Jager C. Simultaneous exposure to low concentrations of dichlorodiphenyltrichloroethane, deltamethrin, nonylphenol and phytoestrogens has negative effects on the reproductive parameters in male Sprague-Dawley rats. *Andrologia*. 2007;39(4):128-35.

Kim J, Kim S, Schaumann GE. Development of QSAR-based two-stage prediction model for estimating mixture toxicity. *SAR and QSAR in environmental research*. 2013;24(10):841-61.

Kim J, Park H, Ha E, Jung T, Paik N, Yang S. Combined effects of noise and mixed solvents exposure on the hearing function among workers in the aviation industry. *Industrial health*. 2005;43(3):567-73.

Kim JP, Park JG, Lee MD, Han MD, Park ST, Lee BH, et al. Co-carcinogenic effects of several Korean foods on gastric cancer induced by N-methyl-N'-nitro-N-nitrosoguanidine in rats. *The Japanese journal of surgery*. 1985;15(6):427-37.

Kim KT, Lee YG, Kim SD. Combined toxicity of copper and phenol derivatives to *Daphnia magna*: effect of complexation reaction. *Environment international*. 2006;32(4):487-92.

Kim NH, Cho HJ, Kim YJ, Cho MJ, Choi HY, Eun CR, et al. Combined effect of high-normal blood pressure and low HDL cholesterol on mortality in an elderly Korean population: the South-West Seoul (SWS) study. *American journal of hypertension*. 2011;24(8):918-23.

Kim Y, Ha E-H, Park H, Ha M, Kim Y, Hong Y-C, et al. Prenatal lead and cadmium co-exposure and infant neurodevelopment at 6 months of age: the Mothers and Children's Environmental Health (MOCEH) study. *Neurotoxicology*. 2013;35:15-22.

Kim Y, Kim B-N, Hong Y-C, Shin M-S, Yoo H-J, Kim J-W, et al. Co-exposure to environmental lead and manganese affects the intelligence of school-aged children. *Neurotoxicology*. 2009;30(4):564-71.

Kimizuka G, Azuma M, Ishibashi M, Shinozaki K, Hayashi Y. Co-carcinogenic effect of chrysotile and amosite asbestos with benzo(a)pyrene in the lung of hamsters. *Acta pathologica japonica*. 1993;43(4):149-53.

Kimizuka G, Ohwada H, Hayashi Y. Co-carcinogenic effect of asbestos and benzo(a)pyrene in the lung of hamster. *Acta pathologica japonica*. 1987;37(3):465-74.

- Kimura Y, Suto S, Tatsuka M. Evaluation of carcinogenic/co-carcinogenic activity of chikusaku-eki, a bamboo charcoal by-product used as a folk remedy, in BALB/c 3T3 cells. *Biological & pharmaceutical bulletin*. 2002;25(8):1026-9.
- Kinoshita H, Ijiri I, Ameno S, Tanaka N, Kubota T, Tsujinaka M, et al. Combined toxicity of methanol and formic acid: two cases of methanol poisoning. *International journal of legal medicine*. 1998;111(6):334-5.
- Kinoshita H, Nishiguchi M, Kasuda S, Takahashi M, Ouchi H, Minami T, et al. A fatal case due to combined toxicity of psychotropic drugs. *Forensic science international*. 2008;181(1-3):e7-8.
- Kinsella AR. Elimination of metabolic co-operation and the induction of sister chromatid exchanges are not properties common to all promoting or co-carcinogenic agents. *Carcinogenesis*. 1982;3(5):499-503.
- Kirkov V, Vantova K. Autonomic nervous manifestations in combined exposure to lead and manganese. *Problemi na khigienata*. 1976;2:99-105.
- Kirkov V. Autonomic nervous changes in combined exposure to lead and arsenic. *Problemi na khigienata*. 1976;2:107-12.
- Kirsch-Volders M, Lison D. Re: Hengstler, J.G., Bolm-Auorff, U., Faldum, A., Janssen, K., Reifenrath, M., Gotte, W., Jung, D., Mayer-Popken, O., Fuchs, J., Gebhard, S., Bienfait, H.G., Schlink, K., Dietrich, C., Faust, D., Epe, B. and Oesch, F. Occupational exposure to heavy metals: DNA damage induction and DNA repair inhibition prove co-exposures to cadmium, cobalt and lead as more dangerous than hitherto expected. *Carcinogenesis*, 2003, 24, 63-73. *Carcinogenesis*. 2003;24(11):1853-4; author reply 5-7.
- Klaverkamp JF, Macdonald WA, Lillie WR, Lutz A. Joint toxicity of mercury and selenium in salmonid eggs. *Archives of environmental contamination and toxicology*. 1983;12(4):415-9.
- Klimarev SI, Siniak IE. Water disinfection by the combined exposure to super-high frequency energy and available chlorine produced during water electrolysis. *Aviakosmicheskaiia i ekologicheskaiia meditsina = Aerospace and environmental medicine*. 2014;48(2):48-51.
- Klovov DI, Zaichkina SI, Aptikaeva GF, Akhmadieva AK, Rozanova OM, Ganassi EE. Induction of cytogenetic damage to rat bone marrow cells by combined exposure to chronic and acute gamma radiation. *Genetika*. 1997;33(6):855-7.
- Knauert S, Escher B, Singer H, Hollender J, Knauer K. Mixture toxicity of three photosystem II inhibitors (atrazine, isoproturon, and diuron) toward photosynthesis of freshwater phytoplankton studied in outdoor mesocosms. *Environmental science & technology*. 2008;42(17):6424-30.
- Kobayashi T, Shiki Y, Meyrick B, Burr IM, Newman JH. Simultaneous exposure of sheep to endotoxin and 100% oxygen. *The American review of respiratory disease*. 1991;144(3 Pt 1):600-5.
- Kolasa E, Houlbert N, Balaguer P, Fardel O. AhR- and NF-kappaB-dependent induction of interleukin-6 by co-exposure to the environmental contaminant benzo[a]anthracene and the cytokine tumor necrosis factor-alpha in human mammary MCF-7 cells. *Chemico-biological interactions*. 2013;203(2):391-400.
- Kolbeneva LI, Veselovskaia KA, Loshchilov IA. Morphofunctional changes in the rat peripheral nervous system during separate and combined exposure to carbon disulfide and noise. *Gigiena truda i professional'nye zabolevaniia*. 1982(12):35-9.
- Kolesov MA. Effect of special training on the resistance of white rats to combined exposure to hypoxia and negative G-forces. *Kosmicheskaiia biologiiia i aviakosmicheskaiia meditsina*. 1980;14(2):85-6.
- Komarov VP, Petin VG. Mathematical model of yeast cell recovery after combined exposure to ionizing radiation and hyperthermia. *Radiobiologiiia*. 1984;24(5):700-3.
- Komarova LN, Tkhabisimova MD, Petin VG. Prognosis of yeast cells recovery after simultaneous exposure to UV-radiation and hyperthermia. *Tsitologiiia*. 2007;49(1):83-8.

- Konczalik JR. Combined exposure to lead and cadmium in selected groups of people in Upper Silesia. *Wiadomosci lekarskie* (Warsaw, Poland : 1960). 2002;55 Suppl 1:249-55.
- Konkina NI. Effect of combined exposure to hypokinesia and gravitational stress on the structure of the wall of the renal vein. *Arkhiv anatomii, gistologii i embriologii*. 1978;74(6):80-4.
- Konoplia AI, Smakhtin MI. Interrelationship between splenocyte immunomodulating factors in animals undergoing combined exposure to ethanol and tetrachloromethane. *Patologicheskaiia fiziologiia i eksperimental'naia terapiia*. 1995(4):22-4.
- Kopp R, Mares J, Soukupova Z, Navratil S, Palikova M. Influence of arsenic and cyanobacteria co-exposure on plasmatic parameters of rainbow trout (*Oncorhynchus mykiss* W.). *Neuro endocrinology letters*. 2014;35 Suppl 2:57-63.
- Koreshkov AA, Makarov VI, Abramov IR, Kots AR. Circadian rhythm of psychomotor reactions in humans exposed to the combined effects of 18-hour day schedule and increased levels of carbon dioxide. *Kosmicheskaiia fiziologiia i aviakosmicheskaiia meditsina*. 1988;22(3):88-91.
- Korsak Z, Sokal J, Dedyk A, Tomas T, Jedrychowski R. Toxic effects of combined exposure to toluene and xylene in animals. I. Acute inhalation study. *Polish journal of occupational medicine*. 1988;1(1):45-50.
- Korsak Z, Sokal JA, Gorny R. Toxic effects of combined exposure to toluene and m-xylene in animals. III. Subchronic inhalation study. *Polish journal of occupational medicine and environmental health*. 1992;5(1):27-33.
- Korsak Z, Sokal JA, Swiercz R. The toxic effects of combined exposure to toluene and m-xylene in animals. II. Blood toluene and m-xylene during single and combined exposure in rats. *Polish journal of occupational medicine and environmental health*. 1991;4(4):377-81.
- Korsak Z, Swiercz R, Jedrychowski R. Effects of acute combined exposure to N-butyl alcohol and M-xylene. *Polish journal of occupational medicine and environmental health*. 1993;6(1):35-41.
- Korsak Z, Wisniewska-Knypl J, Swiercz R. Toxic effects of subchronic combined exposure to n-butyl alcohol and m-xylene in rats. *International journal of occupational medicine and environmental health*. 1994;7(2):155-66.
- Korte A, Wagner HM, Obe G. Simultaneous exposure of Chinese hamsters to ethanol and cigarette smoke: cytogenetic aspects. *Toxicology*. 1981;20(2-3):237-46.
- Kortenkamp A, Faust M. Combined exposures to anti-androgenic chemicals: steps towards cumulative risk assessment. *International journal of andrology*. 2010;33(2):463-74.
- Koskinen A, Lukkarinen H, Laine J, Ahotupa M, Kaapa P, Soukka H. Delay in rat lung alveolarization after the combined exposure of maternal hyperglycemia and postnatal hyperoxia. *Pediatric pulmonology*. 2014;49(2):179-88.
- Kotov AN. Human pulmonary diffusing capacity in combined exposure to hypokinesia and hypoxia. *Kosmicheskaiia fiziologiia i aviakosmicheskaiia meditsina*. 1977;11(2):85-6.
- Koyama S, Nakahara T, Sakurai T, Komatsubara Y, Isozumi Y, Miyakoshi J. Combined exposure of ELF magnetic fields and x-rays increased mutant yields compared with x-rays alone in pTN89 plasmids. *Journal of radiation research*. 2005;46(2):257-64.
- Kraft JC, Willhite CC, Juchau MR. Embryogenesis in cultured whole rat embryos after combined exposures to 3,3',5-triiodo-L-thyronine (T3) plus all-trans-retinoic acid and to T3 plus 9-cis-retinoic acid. *Journal of craniofacial genetics and developmental biology*. 1994;14(2):75-86.
- Krifaton C, Kriszt B, Szoboszlay S, Cserhati M, Szucs A, Kukolya J. Analysis of aflatoxin-B1-degrading microbes by use of a combined toxicity-profiling method. *Mutation research*. 2011;726(1):1-7.

Krishnamurthy SV, Smith GR. Combined effects of malathion and nitrate on early growth, abnormalities, and mortality of wood frog (*Rana sylvatica*) tadpoles. *Ecotoxicology (London, England)*. 2011;20(6):1361-7.

Kristan DM, Hammond KA. Combined effects of cold exposure and sub-lethal intestinal parasites on host morphology and physiology. *The Journal of experimental biology*. 2000;203(Pt 22):3495-504.

Krstic D, Colovic M, Krinulovic K, Djuric D, Vasic V. Inhibition of AChE by single and simultaneous exposure to malathion and its degradation products. *General physiology and biophysics*. 2007;26(4):247-53.

Kubena LF, Huff WE, Harvey RB, Phillips TD, Rottinghaus GE. Individual and combined toxicity of deoxynivalenol and T-2 toxin in broiler chicks. *Poultry science*. 1989;68(5):622-6.

Kubena LF, Smith EE, Gentles A, Harvey RB, Edrington TS, Phillips TD, et al. Individual and combined toxicity of T-2 toxin and cyclopiazonic acid in broiler chicks. *Poultry science*. 1994;73(9):1390-7.

Kucheruk TK. Characteristics of combined effect of thermal and welding aerosol exposure. *Likars'ka sprava*. 2002(1):139-43.

Kuligowski ZK. Motor conditioned reflexes in rats exposed to the combined effect of vibrations and noise. *Acta physiologica Polonica*. 1961;12:821-32.

Kumar A, Ahmad I, Shukla S, Singh BK, Patel DK, Pandey HP, et al. Effect of zinc and paraquat co-exposure on neurodegeneration: Modulation of oxidative stress and expression of metallothioneins, toxicant responsive and transporter genes in rats. *Free radical research*. 2010;44(8):950-65.

Kupriianov AA, Zorile VI, Dudnikov VV. Characteristics of human activity in the simultaneous exposure to linear accelerations and hypoxia. *Voenno-meditsinskii zhurnal*. 1976(6):62-5.

Kurhanewicz N, McIntosh-Kastrinsky R, Tong H, Walsh L, Farraj AK, Hazari MS. Ozone co-exposure modifies cardiac responses to fine and ultrafine ambient particulate matter in mice: concordance of electrocardiogram and mechanical responses. *Particle and fibre toxicology*. 2014;11:54.

Kurpeshev OK. Skin reaction in combined exposure to ionizing radiation and heating in different sequences. *Meditsinskaia radiologija*. 1984;29(12):78-80.

Kurppa K. Marked lethality of rats in combined exposure to carbon monoxide and diethyldithiocarbamate. *Research communications in chemical pathology and pharmacology*. 1981;33(1):179-82.

Kusic H, Leszczynska D. Altered toxicity of organic pollutants in water originated from simultaneous exposure to UV photolysis and CdSe/ZnS quantum dots. *Chemosphere*. 2012;89(7):900-6.

Kuypers DRJ, de Loor H, Naesens M, Coopmans T, de Jonge H. Combined effects of CYP3A5*1, POR*28, and CYP3A4*22 single nucleotide polymorphisms on early concentration-controlled tacrolimus exposure in de-novo renal recipients. *Pharmacogenetics and genomics*. 2014;24(12):597-606.

Lacourt A, Rinaldo M, Gramond C, Ducamp S, Gilg Soit Ilg A, Goldberg M, et al. Co-exposure to refractory ceramic fibres and asbestos and risk of pleural mesothelioma. *The European respiratory journal*. 2014;44(3):725-33.

Lacroix BD, Karlsson MO, Friberg LE. Simultaneous Exposure-Response Modeling of ACR20, ACR50, and ACR70 Improvement Scores in Rheumatoid Arthritis Patients Treated With Certolizumab Pegol. *CPT: pharmacometrics & systems pharmacology*. 2014;3:e143.

Ladefoged O, Hass U, Simonsen L. Neurophysiological and behavioural effects of combined exposure to 2,5-hexanedione and acetone or ethanol in rats. *Pharmacology & toxicology*. 1989;65(5):372-5.

- Lah H, Blair W, Ehrlich R, Shefner A. COMBINED TOXICITY OF STAPHYLOCOCCAL ENTEROTOXIN AND ALPHA-METHYL-3,4-DIHYDROXY-1-PHENYLALANINE (METHYL-DOPA). *Nature*. 1964;202:1226.
- Lakhov FP. Combined effects of noise and hyperbarism on man in atmosphere exposure chamber. *Gigiena truda i professional'nye zabolevaniia*. 1982(10):43-4.
- Lam CW, Casanova M, Heck HD. Depletion of nasal mucosal glutathione by acrolein and enhancement of formaldehyde-induced DNA-protein cross-linking by simultaneous exposure to acrolein. *Archives of toxicology*. 1985;58(2):67-71.
- Lam CY, Businelle MS, Aigner CJ, McClure JB, Cofta-Woerpel L, Cinciripini PM, et al. Individual and combined effects of multiple high-risk triggers on postcessation smoking urge and lapse. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*. 2014;16(5):569-75.
- Landauer MR, Elliott TB, King GL, Bouhaouala SS, Wilhelmsen CL, Ferrell JL, et al. Performance decrement after combined exposure to ionizing radiation and *Shigella sonnei*. *Military medicine*. 2001;166(12 Suppl):71-3.
- Langauer-Lewowicka H, Braszczyńska Z. Evaluation of the combined effect of various harmful physical and chemical factors on the nervous system. *Neurologia i neurochirurgia polska*. 1983;17(1):91-6.
- Langauer-Lewowicka H, Kazibutowska Z. Value of the studies of multimodal evoked potentials for evaluation of neurotoxic effects of combined exposure to lead, copper and zinc. *Neurologia i neurochirurgia polska*. 1991;25(6):715-9.
- Lange A, Ausseil O, Segner H. Alterations of tissue glutathione levels and metallothionein mRNA in rainbow trout during single and combined exposure to cadmium and zinc. *Comparative biochemistry and physiology Toxicology & pharmacology : CBP*. 2002;131(3):231-43.
- Langford D, Grigorian A, Hurford R, Adame A, Crews L, Masliah E. The role of mitochondrial alterations in the combined toxic effects of human immunodeficiency virus Tat protein and methamphetamine on calbindin positive-neurons. *Journal of neurovirology*. 2004;10(6):327-37.
- Lapointe D, Pierron F, Couture P. Individual and combined effects of heat stress and aqueous or dietary copper exposure in fathead minnows (*Pimephales promelas*). *Aquatic toxicology (Amsterdam, Netherlands)*. 2011;104(1-2):80-5.
- Lataye R, Campo P, Loquet G. Combined effects of noise and styrene exposure on hearing function in the rat. *Hearing research*. 2000;139(1-2):86-96.
- Lataye R, Campo P. Combined effects of a simultaneous exposure to noise and toluene on hearing function. *Neurotoxicology and teratology*. 1997;19(5):373-82.
- Lazuko SS, Solodkov AP, Skrinaus SS. Functional activity of BK(Ca) channels in coronary vascular smooth muscle cells during combined exposure to hyperglycemia and stress. *Bulletin of experimental biology and medicine*. 2014;156(3):310-6.
- Lee B-E, Ha E-H. Response to commentary "Co-exposure and confounders during neurodevelopment: we need them in the bigger picture of secondhand smoke exposure during pregnancy". *Environmental research*. 2012;112:235.
- Lee H-J, Jin YB, Kim T-H, Park J-K, Kim N, Choi H-D, et al. The effects of simultaneous combined exposure to CDMA and WCDMA electromagnetic fields on rat testicular function. *Bioelectromagnetics*. 2012;33(4):356-64.
- Lee H-J, Jin YB, Lee JS, Choi J-I, Lee J-W, Myung SH, et al. Combined effects of 60Hz electromagnetic field exposure with various stress factors on cellular transformation in NIH3T3 cells. *Bioelectromagnetics*. 2012;33(3):207-14.

- Lee H-J, Jin YB, Lee J-S, Choi SY, Kim T-H, Pack J-K, et al. Lymphoma development of simultaneously combined exposure to two radiofrequency signals in AKR/J mice. *Bioelectromagnetics*. 2011;32(6):485-92.
- Lee H-J, Lee J-S, Pack J-K, Choi H-D, Kim N, Kim S-H, et al. Lack of teratogenicity after combined exposure of pregnant mice to CDMA and WCDMA radiofrequency electromagnetic fields. *Radiation research*. 2009;172(5):648-52.
- Lee J-H, Landrum PF. Development of a multi-component Damage Assessment Model (MDAM) for time-dependent mixture toxicity with toxicokinetic interactions. *Environmental science & technology*. 2006;40(4):1341-9.
- Lee JS, Mustafa MG, Afifi AA. Effects of short-term, single and combined exposure to low-level NO₂ and O₃ on lung tissue enzyme activities in rats. *Journal of toxicology and environmental health*. 1990;29(3):293-305.
- Lee JY, Chung SM, Lee MY, Chung JH. Ethanol co-exposure increases lethality of allyl alcohol in male Sprague-Dawley rats. *Journal of toxicology and environmental health Part A*. 1999;56(2):121-30.
- Lee KW, Chang Z, Oh B-S, Lu M, Park J-S. Estrogenic response in male bullfrog (*Rana catesbeiana*) hepatocytes after single or combined exposure to cadmium (Cd) and 17beta-estradiol (E₂). *Bulletin of environmental contamination and toxicology*. 2010;85(5):452-6.
- Lee SK, Park JY, Yu ES, Yang WS, Kim SB, Park SK, et al. Individual or combined effects of enalapril and verapamil on chronic cyclosporine nephrotoxicity in rats. *Journal of Korean medical science*. 1999;14(6):653-8.
- Leeman WR, Krul L, Houben GF. Complex mixtures: relevance of combined exposure to substances at low dose levels. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2013;58:141-8.
- Lehto M, Karilainen T, Rog T, Cramariuc O, Vanhala E, Tornaues J, et al. Co-exposure with fullerene may strengthen health effects of organic industrial chemicals. *PloS one*. 2014;9(12):e114490.
- Leitgeb N, Cech R. Dosimetric assessment of simultaneous exposure to elf electric and magnetic fields. *IEEE transactions on bio-medical engineering*. 2008;55(2 Pt 1):671-4.
- Lentini A, Falasca L, Autuori F, Dini L. The simultaneous exposition of galactose and mannose-specific receptors on rat liver macrophages is developmentally regulated. *Bioscience reports*. 1992;12(6):453-61.
- Leone A. Interactive effect of combined exposure to active and passive smoking on cardiovascular system. *Recent patents on cardiovascular drug discovery*. 2011;6(1):61-9.
- Leroux T, Klaeboe R. Combined exposures: an update from the International Commission on Biological Effects of Noise. *Noise & health*. 2012;14(61):313-4.
- Letierce A, Tubert-Bitter P, Kramar A, Maccario J. Two-treatment comparison based on joint toxicity and efficacy ordered alternatives in cancer trials. *Statistics in medicine*. 2003;22(6):859-68.
- Levdik TI, Buldakov LA, Dement'ev SI. Evaluation of changes in the median life span of animals following separate and combined exposures to external ¹³⁷Cs gamma irradiation and incorporated ²³⁹Pu. *Radiobiologiya*. 1989;29(4):550-3.
- Li B, Guo H. Study on the combined toxicity of aflatoxin B₁ and deoxynivalenol. *Wei sheng yan jiu = Journal of hygiene research*. 2000;29(6):393-5.
- Li D, Hu Y, Shen X, Dai X, Han X. Combined effects of two environmental endocrine disruptors nonyl phenol and di-n-butyl phthalate on rat Sertoli cells in vitro. *Reproductive toxicology (Elmsford, NY)*. 2010;30(3):438-45.

- Li P, Feng X, Shang L, Qiu G, Meng B, Zhang H, et al. Human co-exposure to mercury vapor and methylmercury in artisanal mercury mining areas, Guizhou, China. *Ecotoxicology and environmental safety*. 2011;74(3):473-9.
- Li X, Cai D. Single and combined toxic effects of di-2-ethylhexyl phthalate and cypermethrin on fertility and development in the the prepubertal male rats. *Wei sheng yan jiu = Journal of hygiene research*. 2012;41(5):710-6.
- Li Z, Zhang H, Gibson M, Liu P. An evaluation of the combined effects of phenolic endocrine disruptors on vitellogenin induction in goldfish *Carassius auratus*. *Ecotoxicology (London, England)*. 2012;21(7):1919-27.
- Liang J, Zhou Q. Single and binary-combined toxicity of methamidophos, acetochlor and copper acting on earthworms *Eisenia foelide*. *Bulletin of environmental contamination and toxicology*. 2003;71(6):1158-66.
- Liang J, Zhou Q. Single and binary-combined toxicity of methamidophos, acetochlor and Cu on earthworm *Eisenia foetida*. *Ying yong sheng tai xue bao = The journal of applied ecology*. 2003;14(4):593-6.
- Liao BH, Liu HY, Lu SQ, Wang KF, Probst A, Probst JL. Combined toxic effects of cadmium and acid rain on *Vicia faba L.* *Bulletin of environmental contamination and toxicology*. 2003;71(5):998-1004.
- Libert JP, Bach V, Johnson LC, Ehrhart J, Wittersheim G, Keller D. Relative and combined effects of heat and noise exposure on sleep in humans. *Sleep*. 1991;14(1):24-31.
- Liew YP, Bartholomew JR, Demirjian S, Michaels J, Schreiber MJ, Jr. Combined effect of chronic kidney disease and peripheral arterial disease on all-cause mortality in a high-risk population. *Clinical journal of the American Society of Nephrology : CJASN*. 2008;3(4):1084-9.
- Likhachev AI. Combined effect of carcinogenic substances. *Voprosy onkologii*. 1968;14(10):114-24.
- Likhtenshtein VA, Mugutdinov TM. Intensification of the somnogenic effect of heat pulsation by simultaneous exposure of 2 reflexogenic zones. *Fiziologiya cheloveka*. 1985;11(4):689-91.
- Lilley R, Lamontagne AD, Firth H. Combined exposures to workplace psychosocial stressors: relationships with mental health in a sample of NZ cleaners and clerical workers. *American journal of industrial medicine*. 2011;54(5):405-9.
- Lim SJ, Gombojav B, Jee SH, Nam CM, Ohrr H. Gender-specific combined effects of smoking and hypertension on cardiovascular disease mortality in elderly Koreans: THE Kangwha Cohort Study. *Maturitas*. 2012;73(4):331-6.
- Lin C-W, Chuang C-Y, Tang C-H, Chang J-L, Lee L-M, Lee W-J, et al. Combined effects of icam-1 single-nucleotide polymorphisms and environmental carcinogens on oral cancer susceptibility and clinicopathologic development. *PLoS one*. 2013;8(9):e72940.
- Lin M-C. Risk assessment on mixture toxicity of arsenic, zinc and copper intake from consumption of milkfish, *Chanos chanos (Forsskal)*, cultured using contaminated groundwater in Southwest Taiwan. *Bulletin of environmental contamination and toxicology*. 2009;83(1):125-9.
- Lin Z, Shi P, Gao S, Wang L, Yu H. Use of partition coefficients to predict mixture toxicity. *Water research*. 2003;37(9):2223-7.
- Lin Z, Wang L, Shi P, Zhao D, Yin K. Development of a fragment constant method for estimating the mixture toxicity. *Archives of environmental contamination and toxicology*. 2004;46(1):1-7.
- Lin Z, Yu H, Wei D, Wang G, Feng J, Wang L. Prediction of mixture toxicity with its total hydrophobicity. *Chemosphere*. 2002;46(2):305-10.

- Lin Z, Zhong P, Yin K, Wang L, Yu H. Quantification of joint effect for hydrogen bond and development of QSARs for predicting mixture toxicity. *Chemosphere*. 2003;52(7):1199-208.
- Ling ZD, Chang Q, Lipton JW, Tong CW, Landers TM, Carvey PM. Combined toxicity of prenatal bacterial endotoxin exposure and postnatal 6-hydroxydopamine in the adult rat midbrain. *Neuroscience*. 2004;124(3):619-28.
- Lipshits RU, Kratinova MA. Acetylcholine and cholinesterase activity following combined exposure of an organism to an allergen and radiation. *Radiobiologia*. 1977;17(2):296-9.
- Litvinov NN, Kazachkov VI, Astakhova LF, Gasimova ZM. Combined effects of embryotoxic and teratogenic environmental chemical factors (review of the literature). *Gigiena i sanitariia*. 1990(11):80-2.
- Liu F, Kendall RJ, Theodorakis CW. Joint toxicity of sodium arsenate and sodium perchlorate to zebrafish *Danio rerio* larvae. *Environmental toxicology and chemistry*. 2005;24(6):1505-7.
- Liu H-H, Zhao T-B, Li Z-L. Changes of serum urea and creatinine concentrations in rats with lipopolysaccharide and heat co-exposure. *Nan fang yi ke da xue xue bao = Journal of Southern Medical University*. 2008;28(1):86-8.
- Liu J, Liu Y, Habeebu SM, Waalkes MP, Klaassen CD. Chronic combined exposure to cadmium and arsenic exacerbates nephrotoxicity, particularly in metallothionein-I/II null mice. *Toxicology*. 2000;147(3):157-66.
- Liu S-S, Wang C-L, Zhang J, Zhu X-W, Li W-Y. Combined toxicity of pesticide mixtures on green algae and photobacteria. *Ecotoxicology and environmental safety*. 2013;95:98-103.
- Liu T, Zhang C-h, Zhang P. A meta-analysis on combined effects of benzene series and noise exposure on hearing. *Zhonghua lao dong wei sheng zhi ye bing za zhi = Zhonghua laodong weisheng zhiyebing zazhi = Chinese journal of industrial hygiene and occupational diseases*. 2012;30(10):769-71.
- Liu TF, Wang T, Sun C, Wang YM. Single and joint toxicity of cypermethrin and copper on Chinese cabbage (Pakchoi) seeds. *Journal of hazardous materials*. 2009;163(1):344-8.
- Liu W, Zhang Z, Yang X, Xu Y, Liang Y. Effects of UV irradiation and UV/chlorine co-exposure on natural organic matter in water. *The Science of the total environment*. 2012;414:576-84.
- Liu X, Zhang S, Shan X-Q, Christie P. Combined toxicity of cadmium and arsenate to wheat seedlings and plant uptake and antioxidative enzyme responses to cadmium and arsenate co-contamination. *Ecotoxicology and environmental safety*. 2007;68(2):305-13.
- Lizotte RE, Jr., Moore MT, Locke MA, Kroger R. Role of vegetation in a constructed wetland on nutrient-pesticide mixture toxicity to *Hyalella azteca*. *Archives of environmental contamination and toxicology*. 2011;60(2):261-71.
- Ljungberg J, Neely G, Lundstrom R. Cognitive performance and subjective experience during combined exposures to whole-body vibration and noise. *International archives of occupational and environmental health*. 2004;77(3):217-21.
- Lock K, Janssen CR. Mixture toxicity of zinc, cadmium, copper, and lead to the potworm *Enchytraeus albidus*. *Ecotoxicology and environmental safety*. 2002;52(1):1-7.
- Logvinov SV, Potapov AV. Structural changes to the retina in combined exposure to light and x-rays. *Morfologiya (Saint Petersburg, Russia)*. 2000;117(1):19-23.
- Lohani M, Dopp E, Weiss DG, Schiffmann D, Rahman Q. Kerosene soot genotoxicity: enhanced effect upon co-exposure with chrysotile asbestos in Syrian hamster embryo fibroblasts. *Toxicology letters*. 2000;114(1-3):111-6.
- Loquet G, Campo P, Lataye R, Cossec B, Bonnet P. Combined effects of exposure to styrene and ethanol on the auditory function in the rat. *Hearing research*. 2000;148(1-2):173-80.

Loshadkin NA, Gladkikh VD, Kolosova NA, Sinitsyn AN, Goldenkov VA. The use of probit-method for an estimation of toxic effects of combined toxicants at low concentration levels. *Radiatsionnaia biologii, radioecologii*. 2003;43(3):337-40.

Lou J, Jin L, Wu N, Tan Y, Song Y, Gao M, et al. DNA damage and oxidative stress in human B lymphoblastoid cells after combined exposure to hexavalent chromium and nickel compounds. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2013;55:533-40.

Loureiro S, Amorim MJB, Campos B, Rodrigues SMG, Soares AMVM. Assessing joint toxicity of chemicals in *Enchytraeus albidus* (Enchytraeidae) and *Porcellionides pruinosus* (Isopoda) using avoidance behaviour as an endpoint. *Environmental pollution (Barking, Essex : 1987)*. 2009;157(2):625-36.

Lu C, Wang Y, Sheng Z, Liu G, Fu Z, Zhao J, et al. NMR-based metabonomic analysis of the hepatotoxicity induced by combined exposure to PCBs and TCDD in rats. *Toxicology and applied pharmacology*. 2010;248(3):178-84.

Lu G, Wang C, Tang Z, Guo X. Joint toxicity of aromatic compounds to algae and QSAR study. *Ecotoxicology (London, England)*. 2007;16(7):485-90.

Lu GH, Wang C, Tang ZY, Guo XL. Quantitative structure-activity relationships for predicting the joint toxicity of substituted anilines and phenols to algae. *Bulletin of environmental contamination and toxicology*. 2007;78(1):73-7.

Lu GH, Wang C, Tang ZY, Guo XL. Quantitative structure-activity relationships for predicting the joint toxicity of substituted anilines and phenols to algae. *Bulletin of environmental contamination and toxicology*. 2007;78(2):107-11.

Lu GH, Wang C, Wang PF, Chen ZY. Joint toxicity evaluation and QSAR modeling of aromatic amines and phenols to bacteria. *Bulletin of environmental contamination and toxicology*. 2009;83(1):8-14.

Lu G-h, Wu H, Chen Z-y, Li Y. Quantitative structure-activity relationships of joint toxicity of 3, 4-dichloroaniline and substituted aromatics. *Huan jing ke xue = Huanjing kexue*. 2009;30(10):3104-9.

Lu J, Roth RA, Malle E, Ganey PE. Roles of the hemostatic system and neutrophils in liver injury from co-exposure to amiodarone and lipopolysaccharide. *Toxicological sciences : an official journal of the Society of Toxicology*. 2013;136(1):51-62.

Lucia Scherholz de Castro V, Heloisa Chiorato S. Effects of separate and combined exposure to the pesticides methamidophos and chlorothalonil on the development of suckling rats. *International journal of hygiene and environmental health*. 2007;210(2):169-76.

Luna B, Bhatia S, Yoo C, Felty Q, Sandberg DI, Duchowny M, et al. Bayesian network and mechanistic hierarchical structure modeling of increased likelihood of developing intractable childhood epilepsy from the combined effect of mtDNA variants, oxidative damage, and copy number. *Journal of molecular neuroscience : MN*. 2014;54(4):752-66.

Lund SP, Kristiansen GB. Hazards to hearing from combined exposure to toluene and noise in rats. *International journal of occupational medicine and environmental health*. 2008;21(1):47-57.

Luo C, Liang J. Evaluation of combined toxic effects of GB/GF and efficacy of jielin injection against combined poisoning in mice. *Toxicology letters*. 1997;92(3):195-200.

Luo S, Liu X, Wang C. Co-carcinogenic effect of crocidolite plus benzo(a)pyrene on the lungs of rats. *Hua xi yi ke da xue xue bao = Journal of West China University of Medical Sciences = Huaxi yike daxue xuebao*. 1995;26(2):202-5.

- Luo Y, Li X, Li J, Wang X, Qiao Y, Hu D, et al. Combined effects of smoking and peripheral arterial disease on all-cause and cardiovascular disease mortality in a Chinese male cohort. *Journal of vascular surgery*. 2010;51(3):673-8.
- Lushnikov EF, Svinogeeva TP, Shtein LV, Konopliannikov AG. Morphology of rat rhabdomyosarcoma after separate and combined exposure to ionizing radiation and hyperthermia. *Meditinskaja radiologija*. 1981;26(8):53-60.
- Lutz WK, Vamvakas S, Kopp-Schneider A, Schlatter J, Stopper H. Deviation from additivity in mixture toxicity: relevance of nonlinear dose-response relationships and cell line differences in genotoxicity assays with combinations of chemical mutagens and gamma-radiation. *Environmental health perspectives*. 2002;110 Suppl 6:915-8.
- Luukkonen J, Juutilainen J, Naarala J. Combined effects of 872 MHz radiofrequency radiation and ferrous chloride on reactive oxygen species production and DNA damage in human SH-SY5Y neuroblastoma cells. *Bioelectromagnetics*. 2010;31(6):417-24.
- Lynch GR. Effect of simultaneous exposure to differences in photoperiod and temperature on the seasonal molt and reproductive system of the white-footed mouse, *Peromyscus leucopus*. *Comparative biochemistry and physiology A, Comparative physiology*. 1973;44(4):1373-6.
- Ma YL, Gerhardt KJ, Curtis LM, Rybak LP, Whitworth C, Rarey KE. Combined effects of adrenalectomy and noise exposure on compound action potentials, endocochlear potentials and endolymphatic potassium concentrations. *Hearing research*. 1995;91(1-2):79-86.
- Macias G, Marco A, Blaustein AR. Combined exposure to ambient UVB radiation and nitrite negatively affects survival of amphibian early life stages. *The Science of the total environment*. 2007;385(1-3):55-65.
- Magnusson M, Heimann K, Quayle P, Negri AP. Additive toxicity of herbicide mixtures and comparative sensitivity of tropical benthic microalgae. *Marine pollution bulletin*. 2010;60(11):1978-87.
- Mahmoud WMM, Toolaram AP, Menz J, Leder C, Schneider M, Kummerer K. Identification of phototransformation products of thalidomide and mixture toxicity assessment: an experimental and quantitative structural activity relationships (QSAR) approach. *Water research*. 2014;49:11-22.
- Maier A, Schumann BL, Chang X, Talaska G, Puga A. Arsenic co-exposure potentiates benzo a pyrene genotoxicity. *Mutation research*. 2002;517(1-2):101-11.
- Makita Y, Omura M, Ogata R. Effects of perinatal simultaneous exposure to tributyltin (TBT) and p,p'-DDE 1,1-dichloro-2,2-bis(p-chlorophenyl) ethylene) on male offspring of Wistar rats. *Journal of toxicology and environmental health Part A*. 2004;67(5):385-95.
- Makita Y, Omura M. Effects of perinatal combined exposure to 1,1-dichloro-2,2 bis (p-chlorophenyl) ethylene and tributyltin on male reproductive system. *Basic & clinical pharmacology & toxicology*. 2006;99(2):128-32.
- Makita Y, Omura M. Normal Development of Reproductive System in Rat Male Offspring Following Perinatal Combined Exposure to p,p'-DDE and 1,4-Dichlorobenzene. *Toxicology mechanisms and methods*. 2006;16(1):7-11.
- Makita Y. Effects of perinatal combined exposure to 1,1-dichloro-2,2-bis(p-chlorophenyl)ethylene (p,p'-DDE) and tributyltin (TBT) on rat female reproductive system. *Environmental toxicology and pharmacology*. 2008;25(3):380-5.
- Makita Y. Effects of perinatal combined exposure to 1,4-dichlorobenzene and 1,1-dichloro-2, 2-bis (p-chlorophenyl) ethylene (p,p'-DDE) on rat female offspring. *Basic & clinical pharmacology & toxicology*. 2004;95(3):139-43.

- Makita Y. Effects of perinatal combined exposure to 1,4-dichlorobenzene and 1,1-dichloro-2, 2-bis (p-chlorophenyl) ethylene on rat male offspring. *Basic & clinical pharmacology & toxicology*. 2005;96(5):361-5.
- Makita Y. Effects of perinatal, combined exposure to 1,4-dichlorobenzene and 1,1-dichloro-2,2-bis(p-chlorophenyl)ethylene on rat female reproductive system. *Basic & clinical pharmacology & toxicology*. 2008;102(4):360-4.
- Maksimov GG, Burenko GN, Ibatullina RB. Experimental study of the isolated and combined effects of BR-1 benzene at standard exposure levels in different external environments. *Gigiena truda i professional'nye zabolevaniia*. 1984(3):34-7.
- Malenchenko AF, Dorozhenkova TE. Pulmonary macrophages during combined exposure to ionizing radiation and nitrogen oxides. *Radiatsionnaia biologii, radioecologiya*. 1994;34(4-5):502-8.
- Maltoni C, Prodi G. Morphological & histochemical reconstitution of the skin in rabbit following administration of carcinogenic & co-carcinogenic substances. *Tumori*. 1957;43(5):477-83.
- Manenko AK, Ivanova OP, Biriukova NA. Comparative assessment of methods of determination of CL50, Lim ac and resulting combined effects of simultaneous and successive inhalation exposure to 2 and more chemical factors. *Gigiena i sanitariia*. 1991(2):80-3.
- Manenko AK, Ivanova OP. Comparative characteristics of methods of mathematical evaluation of the combined effects of 2 or more harmful chemical factors in their single and successive administration in acute experiments. *Gigiena i sanitariia*. 1988(11):55-8.
- Manenko AK. Method for the quantitative evaluation of the combined effect on the body of 2 or more harmful chemical factors. *Gigiena i sanitariia*. 1982(10):70-2.
- Manimaran A, Sarkar SN, Sankar P. Toxicodynamics of subacute co-exposure to groundwater contaminant arsenic and analgesic-antipyretic drug acetaminophen in rats. *Ecotoxicology and environmental safety*. 2010;73(1):94-100.
- Marhuenda D, Prieto MJ, Periago JF, Marti J, Perbellini L, Cardona A. Biological monitoring of styrene exposure and possible interference of acetone co-exposure. *International archives of occupational and environmental health*. 1997;69(6):455-60.
- Markelewicz RJ, Jr., Hall SJ, Boekelheide K. 2,5-hexanedione and carbendazim coexposure synergistically disrupts rat spermatogenesis despite opposing molecular effects on microtubules. *Toxicological sciences : an official journal of the Society of Toxicology*. 2004;80(1):92-100.
- Marovic D, Tadin A, Mladinic M, Juric-Kacunic D, Galic N. In vitro detection of DNA damage in human leukocytes induced by combined effect of resin composites and adhesive systems. *American journal of dentistry*. 2014;27(1):35-41.
- Marples B, Downing L, Sawarynski KE, Finkelstein JN, Williams JP, Martinez AA, et al. Pulmonary injury after combined exposures to low-dose low-LET radiation and fungal spores. *Radiation research*. 2011;175(4):501-9.
- Marquez-Rosado L, Trejo-Solis C, Cabrales-Romero MdP, Arce-Popoca E, Sierra-Santoyo A, Aleman-Lazarini L, et al. Co-carcinogenic effect of cyclohexanol on the development of preneoplastic lesions in a rat hepatocarcinogenesis model. *Molecular carcinogenesis*. 2007;46(7):524-33.
- Martin C, Wohlsen A, Uhlig S. Changes in airway resistance by simultaneous exposure to TNF-alpha and IL-1beta in perfused rat lungs. *American journal of physiology Lung cellular and molecular physiology*. 2001;280(4):L595-601.
- Marzan Y, Mora R, Butler A, Butler M, Ingenito EP. Effects of simultaneous exposure of surfactant to serum proteins and free radicals. *Experimental lung research*. 2002;28(2):99-121.

Mason AM, Borgert CJ, Bus JS, Moiz Mumtaz M, Simmons JE, Sipes IG, et al. Improving the scientific foundation for mixtures joint toxicity and risk assessment: contributions from the SOT mixtures project--introduction. *Toxicology and applied pharmacology*. 2007;223(2):99-103.

Mateus ML, Santos AP, Batoreu MC. Evidence for zinc protection against 2,5-hexanedione toxicity by co-exposure of rats to zinc chloride. *Journal of applied toxicology : JAT*. 2000;20(3):211-4.

Matiushichev VB, Taratukhin VR, Sharatova VG. Skin enzymatic activity in rats on combined exposure of the body to external beta irradiation and heat load. *Radiobiologiya*. 1978;18(1):96-9.

Matiushiev VB, Taratukhin VR, Iuzhakova GA. Biochemical effects of partial irradiation of the body during combined exposure to radiation. *Radiobiologiya*. 1976;16(2):239-42.

Matta SG, Elberger AJ. Combined exposure to nicotine and ethanol throughout full gestation results in enhanced acquisition of nicotine self-administration in young adult rat offspring. *Psychopharmacology*. 2007;193(2):199-213.

Mayer P, Reichenberg F. Can highly hydrophobic organic substances cause aquatic baseline toxicity and can they contribute to mixture toxicity? *Environmental toxicology and chemistry*. 2006;25(10):2639-44.

Mazurenko NP, Merkalova ZI, Pavlish OA, Bykovsky AF, Kurzman MJ, Mazurenko NN. In vitro studies of a co-carcinogenic effect of vaccinia and herpes group viruses. *Neoplasma*. 1981;28(4):403-12.

McMichael RE, Grindler RE. Children's guilt after transgression: combined effect of exposure to American culture and ethnic background. *Child development*. 1966;37(2):425-31.

McNeil SI, Bhatnagar MK, Turner CJ. Combined toxicity of ethanol and methylmercury in rat. *Toxicology*. 1988;53(2-3):345-63.

Medvedev AI, Akatov VS, Evtodienko IV, Leshchenko VV, Solov'eva ME, Lezhnev EI, et al. DNA degradation and repair in human laryngeal carcinoma HEP-2 cells after combined exposure to vitamin B12b and ascorbic acid. *Tsitologiya*. 2001;43(3):274-8.

Meek MEB, Boobis AR, Crofton KM, Heinemeyer G, Raaij MV, Vickers C. Risk assessment of combined exposure to multiple chemicals: A WHO/IPCS framework. *Regulatory toxicology and pharmacology : RTP*. 2011.

Meek MEB. International experience in addressing combined exposures: increasing the efficiency of assessment. *Toxicology*. 2013;313(2-3):185-9.

Meenan J. Co-carcinogenic effect of sulphasalazine. *British journal of cancer*. 1993;68(5):1043-4.

Mehler WT, Du J, Lydy MJ, You J. Joint toxicity of a pyrethroid insecticide, cypermethrin, and a heavy metal, lead, to the benthic invertebrate *Chironomus dilutus*. *Environmental toxicology and chemistry*. 2011;30(12):2838-45.

Meister A, Bening Y, Brumm LM. The NSI (Noise Sensitivity Index)--a method for the demonstration of acute physical symptoms in noise exposure and combination exposure. *Zeitschrift fur die gesamte Hygiene und ihre Grenzgebiete*. 1989;35(8):502-5.

Meizerov ES. Combined effect of acceleration and double exposure to radiation in 50 and 100 r doses on conditioned reflexes in rats and transfer of experience in a maze. *Radiobiologiya*. 1976;16(5):744-9.

Mejia JJ, Diaz-Barriga F, Calderon J, Rios C, Jimenez-Capdeville ME. Effects of lead-arsenic combined exposure on central monoaminergic systems. *Neurotoxicology and teratology*. 1997;19(6):489-97.

Melvin SD, Cameron MC, Lanctot CM. Individual and mixture toxicity of pharmaceuticals naproxen, carbamazepine, and sulfamethoxazole to Australian striped marsh frog tadpoles (*Limnodynastes peronii*). *Journal of toxicology and environmental health Part A*. 2014;77(6):337-45.

- Men'shov AA, Shleifman FM, Tashker ID, Cherniuk VI, Baril AL. Characteristics of the combined effect of exposure to industrial noise, vibration and microclimate on the human body. *Vrachebnoe delo*. 1980(10):109-12.
- Merino-Garcia D, Kusk KO, Christensen ER. Joint toxicity of similarly and dissimilarly acting chemicals to *Daphnia magna* at different response levels. *Archives of environmental contamination and toxicology*. 2003;45(3):289-96.
- Meshkov NA. The biological effects of combined exposure to radiation and chemical factors (experimental research). *Voenno-meditsinskii zhurnal*. 1995(11):47-51.
- Meurman LO, Kiviluoto R, Hakama M. Combined effect of asbestos exposure and tobacco smoking on Finnish anthophyllite miners and millers. *Annals of the New York Academy of Sciences*. 1979;330:491-5.
- Micallef MJ, Tanimoto T, Torigoe K, Nishida Y, Kohno K, Ikegami H, et al. Simultaneous exposure to interleukin-18 and interleukin-10 in vitro synergistically augments murine spleen natural killer cell activity. *Cancer immunology, immunotherapy : CII*. 1999;48(2-3):109-17.
- Michurina SV, Borodin II, Trufakin VA, Belkin AD, Vakulin GM, Larionov PM, et al. Micro- and ultrastructural characteristics of liver and nuclear endonuclease activity in hepatocytes after the combined exposure to industrial frequency magnetic field and continuous illumination. *Morfologija (Saint Petersburg, Russia)*. 2010;137(5):47-51.
- Mikhailovskaya AA, Kaplan MA, Brodskij RA, Bandurko LN. Combined exposure to electrochemical lysis and photodynamic therapy. *Bulletin of experimental biology and medicine*. 2009;147(1):88-90.
- Mikov I, Stankov K, Vasovic V, Mikov A, Golocorbin-Kon S, Mikov M. Effect of simultaneous exposure to benzene and ethanol on urinary thioether excretion. *International journal of occupational safety and ergonomics : JOSE*. 2012;18(1):107-11.
- Mitchell C, Hamed HA, Cruickshanks N, Tang Y, Bareford MD, Hubbard N, et al. Simultaneous exposure of transformed cells to SRC family inhibitors and CHK1 inhibitors causes cell death. *Cancer biology & therapy*. 2011;12(3):215-28.
- Mitchell NJ, Xue KS, Lin S, Marroquin-Cardona A, Brown KA, Elmore SE, et al. Calcium montmorillonite clay reduces AFB1 and FB1 biomarkers in rats exposed to single and co-exposures of aflatoxin and fumonisin. *Journal of applied toxicology : JAT*. 2014;34(7):795-804.
- Mittal M, Flora SJS. Effects of individual and combined exposure to sodium arsenite and sodium fluoride on tissue oxidative stress, arsenic and fluoride levels in male mice. *Chemico-biological interactions*. 2006;162(2):128-39.
- Miyakoshi J, Mori Y, Yaguchi H, Ding G, Fujimori A. Suppression of heat-induced HSP-70 by simultaneous exposure to 50 mT magnetic field. *Life sciences*. 2000;66(13):1187-96.
- Mizoue T, Miyamoto T, Shimizu T. Combined effect of smoking and occupational exposure to noise on hearing loss in steel factory workers. *Occupational and environmental medicine*. 2003;60(1):56-9.
- Mo L-Y, Liu S-S, Zhu Y-N, Liu H-L, Liu H-Y, Yi Z-S. Combined toxicity of the mixtures of phenol and aniline derivatives to *Vibrio qinghaiensis* sp.-Q67. *Bulletin of environmental contamination and toxicology*. 2011;87(4):473-9.
- Mochida K, Ito K, Harino H, Kakuno A, Fujii K. Acute toxicity of pyrrhione antifouling biocides and joint toxicity with copper to red sea bream (*Pagrus major*) and toy shrimp (*Heptacarpus futilirostris*). *Environmental toxicology and chemistry*. 2006;25(11):3058-64.
- Mohammadi S, Labbafinejad Y, Attarchi M. Combined effects of ototoxic solvents and noise on hearing in automobile plant workers in Iran. *Arhiv za higijenu rada i toksikologiju*. 2010;61(3):267-74.

Mohammadi S, Mazhari MM, Mehrparvar AH, Attarchi MS. Effect of simultaneous exposure to occupational noise and cigarette smoke on binaural hearing impairment. *Noise & health*. 2010;12(48):187-90.

Morata TC, Engel T, Durao A, Costa TR, Krieg EF, Dunn DE, et al. Hearing loss from combined exposures among petroleum refinery workers. *Scandinavian audiology*. 1997;26(3):141-9.

Morata TC, Nysten P, Johnson AC, Dunn DE. Auditory and vestibular functions after single or combined exposure to toluene: a review. *Archives of toxicology*. 1995;69(7):431-43.

Morata TC. Study of the effects of simultaneous exposure to noise and carbon disulfide on workers' hearing. *Scandinavian audiology*. 1989;18(1):53-8.

Morel G, Lambert AM, Rieger B, Subra I. Interactive effect of combined exposure to glycol ethers and alcohols on toxicodynamic and toxicokinetic parameters. *Archives of toxicology*. 1996;70(8):519-25.

Moretti M, Villarini M, Simonucci S, Fatigoni C, Scassellati-Sforzolini G, Monarca S, et al. Effects of co-exposure to extremely low frequency (ELF) magnetic fields and benzene or benzene metabolites determined in vitro by the alkaline comet assay. *Toxicology letters*. 2005;157(2):119-28.

Morgan JD, Mitchell DG, Chapman PM. Individual and combined toxicity of manganese and molybdenum to mussel, *Mytilus edulis*, larvae. *Bulletin of environmental contamination and toxicology*. 1986;37(2):303-7.

Morgan WF, Yates BL, Rufer JT, Abella Columna E, Valcarcel ER, Phillips JW. Chromosomal aberration induction in CHO cells by combined exposure to restriction enzymes and X-rays. *International journal of radiation biology*. 1991;60(4):627-34.

Mori T, Ito S, Namiki M, Suzuki T, Kobayashi S, Matsubayashi K, et al. Involvement of free radicals followed by the activation of phospholipase A2 in the mechanism that underlies the combined effects of methamphetamine and morphine on subacute toxicity or lethality in mice: comparison of the therapeutic potential of fullerene, mepacrine, and cooling. *Toxicology*. 2007;236(3):149-57.

Morimoto T, Higaki T, Ota M, Inawaka K, Kawamura S, Bungo T. Effect of simultaneous exposure to mixture of two skin sensitizers on skin sensitization response in guinea pigs and mice. *The Journal of toxicological sciences*. 2014;39(1):163-71.

Moskalev II, Strel'tsova VN. Combined effect of radiation and chemical carcinogens. *Meditinskaiia radiologiia*. 1984;29(9):50-9.

Moubarak AS, Johnson ZB, Rosenkrans CF. Antagonistic effects of simultaneous exposure of ergot alkaloids on kidney adenosine triphosphatase system. *In vitro cellular & developmental biology Animal*. 2003;39(8-9):395-8.

Moulder JE, Fish BL. Effect of sequencing on combined toxicity of renal irradiation and cisplatin. *NCI monographs : a publication of the National Cancer Institute*. 1988(6):35-9.

Mudaliar JH, Freischlag JA, Johnson D, Coe DA, Kelly H, Hanson L, et al. Combined exposure to cigarette smoke and hypercholesterolemia decreases vasorelaxation of the aorta. *Journal of vascular surgery*. 1997;25(5):884-9.

Mukhamedov T, Ziiiev SI. DISTURBANCES IN THE CAPILLARY PERMEABILITY OF THE SKIN IN COMBINED EXPOSURE TO I-131 AND NOISE. *Meditinskaiia radiologiia*. 1964;9:34-7.

Mukhametova GM, Vozovaia MA. Reproductive power and incidence of gynecological diseases among female workers exposed to a combined effect of gasoline and chlorinated hydrocarbons. *Gigiena truda i professional'nye zabolvaniia*. 1972;16(11):6-9.

Muller WU, Streffer C. Time factors in combined exposures of mouse embryos to radiation and mercury. *Radiation and environmental biophysics*. 1988;27(2):115-21.

Muller WU. Temperature dependence of combined exposure of preimplantation mouse embryos to X-rays and mercury. *Radiation and environmental biophysics*. 1990;29(2):109-14.

Mundy ME, Honey RC, Dwyer DM. Superior discrimination between similar stimuli after simultaneous exposure. *Quarterly journal of experimental psychology* (2006). 2009;62(1):18-25.

Munoz-Abellan C, Rabasa C, Daviu N, Nadal R, Armario A. Behavioral and endocrine consequences of simultaneous exposure to two different stressors in rats: interaction or independence? *PloS one*. 2011;6(6):e21426.

Munro TR. Proceedings: Are the combined effects of X-ray and immune responses on cells unexpectedly lethal? *The British journal of radiology*. 1975;48(569):414.

Muronets EM, Kovtunenkov LV, Kameneva SV. Mutagenic effect of combined exposure to 8-methoxypsoralen or angelicin and long-wave ultraviolet light in uvs-strains of *Aspergillus nidulans*. *Genetika*. 1980;16(7):1168-75.

Murphy ST, Monahan JL, Zajonc RB. Additivity of nonconscious affect: combined effects of priming and exposure. *Journal of personality and social psychology*. 1995;69(4):589-602.

Murthy MS, Madhvanath U, Subrahmanyam P, Rao BS, Reddy NM. Letter: Synergistic effect of simultaneous exposure to 60-Co gamma rays and 210-Po alpha rays in diploid yeast. *Radiation research*. 1975;63(1):185-90.

Murzenok PP, Chura NA. Effects of diazepam and piracetam on the rat behavior responses after combined exposure to the low doses of ionizing radiation and heat. *Rossiiskii fiziologicheskii zhurnal imeni IM Sechenova*. 1998;84(3):218-25.

Mwense M, Wang XZ, Buontempo FV, Horan N, Young A, Osborn D. Prediction of noninteractive mixture toxicity of organic compounds based on a fuzzy set method. *Journal of chemical information and computer sciences*. 2004;44(5):1763-73.

Mwense M, Wang XZ, Buontempo FV, Horan N, Young A, Osborn D. QSAR approach for mixture toxicity prediction using independent latent descriptors and fuzzy membership functions. *SAR and QSAR in environmental research*. 2006;17(1):53-73.

Nabi H, Kivimaki M, Empana J-P, Sabia S, Britton A, Marmot MG, et al. Combined effects of depressive symptoms and resting heart rate on mortality: the Whitehall II prospective cohort study. *The Journal of clinical psychiatry*. 2011;72(9):1199-206.

Namiki M, Mori T, Sawaguchi T, Ito S, Suzuki T. Underlying mechanism of combined effect of methamphetamine and morphine on lethality in mice and therapeutic potential of cooling. *Journal of pharmacological sciences*. 2005;99(2):168-76.

Nampoothiri LP, Agarwal A, Gupta S. Effect of co-exposure to lead and cadmium on antioxidant status in rat ovarian granulosa cells. *Archives of toxicology*. 2007;81(3):145-50.

Nasonova EA, Glazunov AV. Recovery of the viability of Chinese hamster V79-4 cells after combined exposure to hyperthermia and radiation. *Tsitologiya*. 1988;30(10):1273-6.

Nechkina MA. Cytogenetic activity of 2,4-D dimethylamine salt and ammonium nitrate in isolated and combined exposure of plants in experiment. *Gigiena i sanitariia*. 1993(6):55-7.

Nekhoroshev AS. Characteristics of the reactions of the nuclei of the spinal organ hair cells in response to combined exposure to general vibration and noise. *Gigiena i sanitariia*. 1991(1):47-9.

Nemirovskaia TL, Tarasova OS, Shenkman BS, Koshelev VB. The effect of the 12-day combined exposure to hypobaric hypoxia and physical load on the structuro-metabolic characteristics of rat skeletal muscles. *Biulleten' eksperimental'noi biologii i meditsiny*. 1995;119(6):602-5.

Nenashev AA, Chausov VI, Pacheva MT, Otarova DD. Changes in the nervous system from combined exposure to vibration and hyperbaric oxygenation. *Nervnaia sistema*. 1988;27:87-92.

Neovius M, Sundstrom J, Rasmussen F. Combined effects of overweight and smoking in late adolescence on subsequent mortality: nationwide cohort study. *BMJ (Clinical research ed)*. 2009;338:b496.

Neukomm S, de T. Study of some optical azo dyes from the point of view of their carcinogenic and co-carcinogenic activity. *Medicina experimentalis : International journal of experimental medicine*. 1961;4:296-306.

Neukomm S. Co-carcinogenic action of various fractions of tobacco smoke. *Acta - Unio Internationalis Contra Cancrum*. 1962;18:33-6.

Neukomm S. Evaluation of the potential carcinogenic and co-carcinogenic action of drugs (injectable organic iron complexes). *Oncologia*. 1965;19(3):239-53.

Neuwoehner J, Zilberman T, Fenner K, Escher BI. QSAR-analysis and mixture toxicity as diagnostic tools: Influence of degradation on the toxicity and mode of action of diuron in algae and daphnids. *Aquatic toxicology (Amsterdam, Netherlands)*. 2010;97(1):58-67.

Ng CYP, Choi VWY, Lam ACL, Cheng SH, Yu KN. The multiple stressor effect in zebrafish embryos from simultaneous exposure to ionising radiation and cadmium. *Journal of radiological protection : official journal of the Society for Radiological Protection*. 2013;33(1):113-21.

Nguyen LTH, Muysen BTA, Janssen CR. Single versus combined exposure of *Hyalella azteca* to zinc contaminated sediment and food. *Chemosphere*. 2012;87(1):84-90.

Ni W, Huang Y, Wang X, Zhang J, Wu K. Associations of neonatal lead, cadmium, chromium and nickel co-exposure with DNA oxidative damage in an electronic waste recycling town. *The Science of the total environment*. 2014;472:354-62.

Nikishkin IA, Sukolinskii VN, Kovaleva OV, Raspopova NI, Naumenko VK. Enzymes protecting the erythrocyte membrane during the combined exposure to an antioxidant complex and acute irradiation. *Radiobiologia*. 1992;32(5):738-42.

Nishino R, Fukuyama T, Kosaka T, Hayashi K, Watanabe Y, Kurosawa Y, et al. Effects of short-term oral combined exposure to environmental immunotoxic chemicals in mice. *Journal of immunotoxicology*. 2014;11(4):359-66.

Nizhegorodov VM, Kalinin IT, Voronin AP, Tsar NG, Markhotskii IL. The effect of prolonged, combined exposure to carbon monoxide, nitric oxide and ammonia on the supply and demand of the human organism in relation to vitamins A, B1, B2, B6, PP and C. *Gigiena truda i professional'nye zabolovaniia*. 1969;13(7):43-5.

Nogueira E. Rat renal carcinogenesis after chronic simultaneous exposure to lead acetate and N-nitrosodiethylamine. *Virchows Archiv B, Cell pathology including molecular pathology*. 1987;53(6):365-74.

Nopp A, Johansson SGO, Lundberg M, Oman H. Simultaneous exposure of several allergens has an additive effect on multisensitized basophils. *Allergy*. 2006;61(11):1366-8.

Normandeau J, Chakrabarti S, Brodeur J. Influence of simultaneous exposure to acrylonitrile and styrene on the toxicity and metabolism of styrene in rats. *Toxicology and applied pharmacology*. 1984;75(2):346-9.

Nourshargh S, Hoult JR. Divergent effects of co-carcinogenic phorbol esters and a synthetic diacylglycerol on human neutrophil chemokinesis and granular enzyme secretion. *British journal of pharmacology*. 1987;91(3):557-68.

Nylen P, Ebendal T, Eriksdotter-Nilsson M, Hansson T, Henschen A, Johnson AC, et al. Testicular atrophy and loss of nerve growth factor-immunoreactive germ cell line in rats exposed to n-hexane and a protective effect of simultaneous exposure to toluene or xylene. *Archives of toxicology*. 1989;63(4):296-307.

Nylen P, Hagman M, Johnson AC. Function of the auditory and visual systems, and of peripheral nerve, in rats after long-term combined exposure to n-hexane and methylated benzene derivatives. I. Toluene. *Pharmacology & toxicology*. 1994;74(2):116-23.

Nylen P, Hagman M, Johnson AC. Function of the auditory system, the visual system, and peripheral nerve and long-term combined exposure to toluene and ethanol in rats. *Pharmacology & toxicology*. 1995;76(2):107-11.

Nylen P, Hagman M. Function of the auditory and visual systems, and of peripheral nerve, in rats after long-term combined exposure to n-hexane and methylated benzene derivatives. II. Xylene. *Pharmacology & toxicology*. 1994;74(2):124-9.

Odashima S. Combined effect of carcinogens with different actions. I. Development of liver cancer in the rat by the feeding of 4-dimethylaminostilbene following initial feeding of 4-dimethylaminoazobenzene. *Gan*. 1962;53:247-57.

Odashima S. Combined effect of carcinogens with different actions. III. Development of skin cancer in the rat by feeding 4-dimethylaminostilbene following initial painting of 20-methylcholanthrene. *Gan*. 1962;53:269-74.

Oganesian KR, Oganisian AO, Gukasian LE. Lipid peroxidation upon combined exposure to vibration and liquorice preparations. *Gigiena i sanitariia*. 2008(3):80-1.

Oganisyan AO, Oganesyan KR, Minasyan SM. Changes in succinate dehydrogenase activity in various parts of the brain during combined exposure to vibration and licorice root. *Neuroscience and behavioral physiology*. 2005;35(5):545-8.

Ogony J, Matthews R, Anni H, Shannon K, Ercal N. The mechanism of elevated toxicity in HepG2 cells due to combined exposure to ethanol and ionizing radiation. *Journal of applied toxicology : JAT*. 2008;28(3):345-55.

Okui T, Fujiwara Y. Inhibition of human excision DNA repair by inorganic arsenic and the co-mutagenic effect in V79 Chinese hamster cells. *Mutation research*. 1986;172(1):69-76.

Olsen AO, Dillner J, Skrondal A, Magnus P. Combined effect of smoking and human papillomavirus type 16 infection in cervical carcinogenesis. *Epidemiology (Cambridge, Mass)*. 1998;9(3):346-9.

Ondracek K, Bandouchova H, Damkova V, Hilscherova K, Kral J, Osickova J, et al. Risk of combined exposure of birds to cyanobacterial biomass containing microcystins, acetylcholinesterase inhibitor and anticoagulant. *Neuro endocrinology letters*. 2012;33 Suppl 3:155-60.

Opacka J, Opalska B, Kolakowski J, Wronska-Nofer T. Neurotoxic effects of the combined exposure to carbon disulphide and ethanol in rats. *Toxicology letters*. 1986;32(1-2):9-18.

Orsini N, Bellocco R, Bottai M, Pagano M, Michaelsson K, Wolk A. Combined effects of obesity and physical activity in predicting mortality among men. *Journal of internal medicine*. 2008;264(5):442-51.

Osickova J, Skochova H, Ondracek K, Kral J, Damkova V, Peckova L, et al. Risk of single and combined exposure of birds to non-steroidal anti-inflammatory drugs and lead. *Neuro endocrinology letters*. 2012;33 Suppl 3:145-50.

Pachamuthu P, Kamble ST. In vivo study on combined toxicity of *Metarhizium anisopliae* (Deuteromycotina: Hyphomycetes) strain ESC-1 with sublethal doses of chlorpyrifos, propetamphos, and cyfluthrin against German cockroach (Dictyoptera: Blattellidae). *Journal of economic entomology*. 2000;93(1):60-70.

Pacini N, Dorr AJM, Elia AC, Scoparo M, Abete MC, Prearo M. Melamine-cyanurate complexes and oxidative stress markers in trout kidney following melamine and cyanuric acid long-term co-exposure and withdrawal. *Fish physiology and biochemistry*. 2014;40(5):1609-19.

Pal R, Nath R, Gill KD. Lipid peroxidation and antioxidant defense enzymes in various regions of adult rat brain after co-exposure to cadmium and ethanol. *Pharmacology & toxicology*. 1993;73(4):209-14.

Palikova M, Navratil S, Papezikova I, Ambroz P, Vesely T, Pokorova D, et al. Combined exposure of carps (*Cyprinus carpio* L.) to cyanobacterial biomass and white spot disease. *Neuro endocrinology letters*. 2012;33 Suppl 3:77-83.

Pallasaho P, Kainu A, Sovijarvi A, Lindqvist A, Piiirila PL. Combined effect of smoking and occupational exposure to dusts, gases or fumes on the incidence of COPD. *Copd*. 2014;11(1):88-95.

Panchenko EN, Nalcha IF, Dziuba NI. Cerebral hemodynamics in workers subjected to combined exposure to methanol and carbon monoxide vapors. *Vrachebnoe delo*. 1989(7):99-102.

Pandya C, Pillai P, Nampoothiri LP, Bhatt N, Gupta S. Effect of lead and cadmium co-exposure on testicular steroid metabolism and antioxidant system of adult male rats. *Andrologia*. 2012;44 Suppl 1:813-22.

Pandya CD, Pillai PP, Gupta SS. Lead and cadmium co-exposure mediated toxic insults on hepatic steroid metabolism and antioxidant system of adult male rats. *Biological trace element research*. 2010;134(3):307-17.

Pankow D, Ponsold W. Combined effects of carbon monoxide and other biologically active harmful factors on the organism. *Zeitschrift fur die gesamte Hygiene und ihre Grenzgebiete*. 1974;20(9):561-71.

Paolini M, Cantelli-Forti G, Perocco P, Pedulli GF, Abdel-Rahman SZ, Legator MS. Co-carcinogenic effect of beta-carotene. *Nature*. 1999;398(6730):760-1.

Paran'ko NM. Regional vascular reactions in separate and simultaneous exposure to vibration and cold. *Gigiena truda i professional'nye zabolevaniia*. 1969;13(6):36-8.

Park CH, Amare M, Morrison FS, Maloney TR, Goodwin JW. Chemotherapy sensitivity assessment of leukemic colony-forming cells with in vitro simultaneous exposure to multiple drugs: clinical correlations in acute nonlymphocytic leukemia. *Cancer treatment reports*. 1982;66(6):1257-61.

Pascale A, Amadio M, Caffino L, Racagni G, Govoni S, Fumagalli F. ELAV-GAP43 pathway activation following combined exposure to cocaine and stress. *Psychopharmacology*. 2011;218(1):249-56.

Paskalev Z, Apostolova D. A health status study of the population subjected to combined exposures to ionizing and nonionizing radiation factors. *Problemi na khigienata*. 1996;21:131-4.

Paskova V, Veronika P, Paskerova H, Hana P, Pikula J, Jiri P, et al. Combined exposure of Japanese quails to cyanotoxins, Newcastle virus and lead: oxidative stress responses. *Ecotoxicology and environmental safety*. 2011;74(7):2082-90.

Patel E, Lynch C, Ruff V, Reynolds M. Co-exposure to nickel and cobalt chloride enhances cytotoxicity and oxidative stress in human lung epithelial cells. *Toxicology and applied pharmacology*. 2012;258(3):367-75.

Pekkarinen J, Starck J. Digital high-speed sampling of combined exposure to noise and vibration. *Scandinavian journal of work, environment & health*. 1986;12(4 Spec No):327-31.

Pelon W, Luftig RB, Johnston KH. *Vibrio vulnificus* load reduction in oysters after combined exposure to *Vibrio vulnificus*--specific bacteriophage and to an oyster extract component. *Journal of food protection*. 2005;68(6):1188-91.

Pence BC, Buddingh F. Co-carcinogenic effect of carbon black ingestion with dietary fat on the development of colon tumors in rats. *Toxicology letters*. 1987;37(2):177-82.

- Peneda J, Baptista A. The effect of combined toxicity on the development of alcoholic pancreatic lesions. A long-term experimental trial. *Acta medica portuguesa*. 1995;8(3):137-43.
- Penttinen P, Huttunen K, Pelkonen J, Hirvonen M-R. The proportions of *Streptomyces californicus* and *Stachybotrys chartarum* in simultaneous exposure affect inflammatory responses in mouse RAW264.7 macrophages. *Inhalation toxicology*. 2005;17(2):79-85.
- Peplonska B, Burdelak W, Bukowska A, Krysicka J, Konieczko K. Night shift work characteristics and occupational co-exposures in industrial plants in Lodz, Poland. *International journal of occupational medicine and environmental health*. 2013;26(4):522-34.
- Pereira C, Mapuskar K, Vaman Rao C. A two-generation chronic mixture toxicity study of Clophen A60 and diethyl phthalate on histology of adrenal cortex and thyroid of rats. *Acta histochemica*. 2007;109(1):29-36.
- Perez-Carreón JI, Dargent C, Merhi M, Fattel-Fazenda S, Arce-Popoca E, Villa-Trevino S, et al. Tumor promoting and co-carcinogenic effects in medium-term rat hepatocarcinogenesis are not modified by co-administration of 12 pesticides in mixture at acceptable daily intake. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2009;47(3):540-6.
- Perret JL, Walters EH, Abramson MJ, McDonald CF, Dharmage SC. The independent and combined effects of lifetime smoke exposures and asthma as they relate to COPD. *Expert review of respiratory medicine*. 2014;8(4):503-14.
- Petersen K, Tollefsen KE. Assessing combined toxicity of estrogen receptor agonists in a primary culture of rainbow trout (*Oncorhynchus mykiss*) hepatocytes. *Aquatic toxicology (Amsterdam, Netherlands)*. 2011;101(1):186-95.
- Pettersson H, Burström L, Nilsson T. The effect on the temporary threshold shift in hearing acuity from combined exposure to authentic noise and hand-arm vibration. *International archives of occupational and environmental health*. 2011;84(8):951-7.
- Phoa FKH, Xu H, Wong WK. The use of nonregular fractional factorial designs in combination toxicity studies. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2009;47(9):2183-8.
- Phyu YL, Palmer CG, Warne MSJ, Hose GC, Chapman JC, Lim RP. A comparison of mixture toxicity assessment: examining the chronic toxicity of atrazine, permethrin and chlorothalonil in mixtures to *Ceriodaphnia cf. dubia*. *Chemosphere*. 2011;85(10):1568-73.
- Pierce DR, Kane CJ, Serbus DC, Light KE. Microencephaly and selective decreases in cerebellar Purkinje cell numbers following combined exposure to ethanol and methadone during rat brain development. *Developmental neuroscience*. 1997;19(5):438-45.
- Piercy KT, Donnell RL, Kirkpatrick SS, Timaran CH, Stevens SL, Freeman MB, et al. Effects of estrogen, progesterone, and combination exposure on interleukin-1 beta-induced expression of VCAM-1, ICAM-1, PECAM, and E-selectin by human female iliac artery endothelial cells. *The Journal of surgical research*. 2002;105(2):215-9.
- Pikula J, Bandouchova H, Hilscherova K, Paskova V, Sedlackova J, Adamovsky O, et al. Combined exposure to cyanobacterial biomass, lead and the Newcastle virus enhances avian toxicity. *The Science of the total environment*. 2010;408(21):4984-92.
- Pilat-Marcinkiewicz B, Brzoska MM, Kasacka I, Sawicki B. Histological evaluation of the thyroid structure after co-exposure to cadmium and ethanol. *Roczniki Akademii Medycznej w Białymstoku (1995)*. 2004;49 Suppl 1:152-4.

Pillai A, Laxmi Priya PN, Gupta S. Effects of combined exposure to lead and cadmium on pituitary membrane of female rats. *Archives of toxicology*. 2002;76(12):671-5.

Pillai A, Priya L, Gupta S. Effects of combined exposure to lead and cadmium on the hypothalamic-pituitary axis function in proestrous rats. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2003;41(3):379-84.

Platonov AE, Verzhinina IV, Serebrovskaia LV, Shepeleva GK. Membrane-attacking complexes and membrane complement inhibitors on the leukocyte surface during combined exposure with meningococcus lipopolysaccharide and complement. *Biulleten' eksperimental'noi biologii i meditsiny*. 1999;127(4):433-8.

Plitman SI, Khvastunov RM, Morozova LF, Lastochkina KO. Study of water odor intensity after combined exposure to chemical substances. *Gigiena i sanitariia*. 1990(11):29-32.

Poch G, Dittrich P, Reiffenstein RJ, Lenk W, Schuster A. Evaluation of experimental combined toxicity by use of dose-frequency curves: comparison with theoretical additivity as well as independence. *Canadian journal of physiology and pharmacology*. 1990;68(10):1338-45.

Poel WE. Progesterone and the prolonged progestational state: co-carcinogenic factors in mammary tumor induction. *British journal of cancer*. 1965;19(4):824-9.

Pohl HR, Ruiz P, Scinicariello F, Mumtaz MM. Joint toxicity of alkoxyethanol mixtures: contribution of in silico applications. *Regulatory toxicology and pharmacology : RTP*. 2012;64(1):134-42.

Pomerantseva MD, Ramaia LK, Liaginskaia AM. Frequency of dominant lethal mutations induced by combined exposure to incorporated ¹³⁷Cs and external gamma-irradiation in mice. *Genetika*. 2000;36(10):1414-6.

Popova IA, Sanososiuk TM, Buravkova LB. Clinical-biochemical parameters of blood in humans exposed to the combined effects of short-term head-down tilt and isolation. *Aviakosmicheskaiia i ekologicheskaiia meditsina = Aerospace and environmental medicine*. 2004;38(1):42-8.

Porsbring T, Backhaus T, Johansson P, Kuylensstierna M, Blanck H. Mixture toxicity from photosystem II inhibitors on microalgal community succession is predictable by concentration addition. *Environmental toxicology and chemistry*. 2010;29(12):2806-13.

Potapov IN, Pashkova VS, Krutova TV, Khaleev DV. Changes in the morphology of the thymus and spleen of healthy mice in combined exposure to nitrosomethylurea and immunomodulators. *Izvestiia Akademii nauk Serii biologicheskaiia*. 1993(3):465-8.

Prato E, Biandolino F. Combined toxicity of mercury, copper and cadmium on embryogenesis and early larval stages of the *Mytilus galloprovincialis*. *Environmental technology*. 2007;28(8):915-20.

Price P, Zaleski R, Hollnagel H, Ketelslegers H, Han X. Assessing the safety of co-exposure to food packaging migrants in food and water using the maximum cumulative ratio and an established decision tree. *Food additives & contaminants Part A, Chemistry, analysis, control, exposure & risk assessment*. 2014;31(3):414-21.

Price PJ, Auletta AE, King MP, Hugunin PM, Huebner RJ. The co-carcinogenic activity of 4-nitropyridine-1-oxide (4-NPO) and prevention of transformation by type-specific anti-viral antibodies. *In vitro*. 1976;12(8):595-8.

Price PS, Hollnagel HM, Zabik JM. Characterizing the noncancer toxicity of mixtures using concepts from the TTC and quantitative models of uncertainty in mixture toxicity. *Risk analysis : an official publication of the Society for Risk Analysis*. 2009;29(11):1534-48.

Priya PNL, Pillai A, Gupta S. Effect of simultaneous exposure to lead and cadmium on gonadotropin binding and steroidogenesis on granulosa cells: an in vitro study. *Indian journal of experimental biology*. 2004;42(2):143-8.

- Prokhonchukov AA, Komissarova NA, Kolesnik AG, Novikov LL. Effect of the combined exposure to ionizing radiation and weightlessness on the calcium and phosphorus content in the mineral fraction of rat calcified skeletal tissues. *Radiobiologiya*. 1979;19(5):760-2.
- Protogerou AD, Safar ME, Papaioannou TG, Zhang Y, Agnoletti D, Papadogiannis D, et al. The combined effect of aortic stiffness and pressure wave reflections on mortality in the very old with cardiovascular disease: the PROTEGER Study. *Hypertension research : official journal of the Japanese Society of Hypertension*. 2011;34(7):803-8.
- Pruimboom L, Fox T, Muskiet FAJ. Lactase persistence and augmented salivary alpha-amylase gene copy numbers might have been selected by the combined toxic effects of gluten and (food born) pathogens. *Medical hypotheses*. 2014;82(3):326-34.
- Qian Q, Wang T-c, Song Y-s, Wang L, Li Y-h, Yu S-f, et al. Effect of occupational combined exposure of chromium and iron on erythrocyte metabolism. *Zhonghua yu fang yi xue za zhi [Chinese journal of preventive medicine]*. 2012;46(4):355-8.
- Qiu J, Zhu G, Chen X, Shao C, Gu S. Combined effects of gamma-irradiation and cadmium exposures on osteoblasts in vitro. *Environmental toxicology and pharmacology*. 2012;33(2):149-57.
- Qu R, Wang X, Wang Z, Wei Z, Wang L. Metal accumulation and antioxidant defenses in the freshwater fish *Carassius auratus* in response to single and combined exposure to cadmium and hydroxylated multi-walled carbon nanotubes. *Journal of hazardous materials*. 2014;275:89-98.
- Ra JS, Lee BC, Chang NI, Kim SD. Estimating the combined toxicity by two-step prediction model on the complicated chemical mixtures from wastewater treatment plant effluents. *Environmental toxicology and chemistry*. 2006;25(8):2107-13.
- Raffler N, Hermanns I, Sayn D, Gores B, Ellegast R, Rissler J. Assessing combined exposures of whole-body vibration and awkward posture--further results from application of a simultaneous field measurement methodology. *Industrial health*. 2010;48(5):638-44.
- Rajkovic V, Matavulj M, Johansson O. Combined exposure of peripubertal male rats to the endocrine-disrupting compound atrazine and power-frequency electromagnetic fields causes degranulation of cutaneous mast cells: a new toxic environmental hazard? *Archives of environmental contamination and toxicology*. 2010;59(2):334-41.
- Rakitskii VN, Daniliuk VP. Use of the method of mathematical planning of an experiment for evaluation of harmful combined effects of xenobiotics on the general sanitary condition of water reservoirs. *Gigiena i sanitariia*. 1992(2):72-3.
- Ramchandani AG, D'Souza AV, Borges AM, Bhisey RA. Evaluation of carcinogenic/co-carcinogenic activity of a common chewing product, pan masala, in mouse skin, stomach and esophagus. *International journal of cancer*. 1998;75(2):225-32.
- Rana SV, Kumar S. Lipid peroxidation in liver, kidney and brain of rats after combined exposure to xylene, toluene and methyl alcohol. *Indian journal of experimental biology*. 1994;32(12):919-21.
- Ranjan A, Dumka VK, Singh ND. Effect of flubendiamide, lead and their combined exposure on erythrocytic indices in water buffalo calves. *Bulletin of environmental contamination and toxicology*. 2014;92(4):410-4.
- Rao DB, Moore DR, Reinke LA, Fechter LD. Free radical generation in the cochlea during combined exposure to noise and carbon monoxide: an electrophysiological and an EPR study. *Hearing research*. 2001;161(1-2):113-22.
- Raskosha OV, Ermakova OV. The peculiarities of separate and combined exposure to low dose-rate gamma-radiation and ²³²Th nitrate on thyroid gland. *Radiatsionnaia biologiya, radioecologiya*. 2005;45(6):744-50.

Ray DE, Burr SA, Lister T. The effects of combined exposure to the pyrethroids deltamethrin and S-bioallethrin on hippocampal inhibition and skeletal muscle hyperexcitability in rats. *Toxicology and applied pharmacology*. 2006;216(2):354-62.

Ray JH, Altenburg LC, Jacobs MM. Effect of sodium selenite and methyl methanesulfonate or N-hydroxy-2-acetylaminofluorene co-exposure on sister-chromatid exchange production in human whole blood cultures. *Mutation research*. 1978;57(3):359-68.

Read LT, Hahn RW, Thompson CC, Bauer DL, Norton EB, Clements JD. Simultaneous exposure to *Escherichia coli* heat-labile and heat-stable enterotoxins increases fluid secretion and alters cyclic nucleotide and cytokine production by intestinal epithelial cells. *Infection and immunity*. 2014;82(12):5308-16.

Reboud S, Pageaut G. Co-carcinogenic effect of progesterone on 20-methylcholanthrene induced cervical carcinoma in mice. *Nature*. 1973;241(5389):398-9.

Ren Y, Ichinose T, He M, Arashidani K, Yoshida Y, Yoshida S, et al. Aggravation of ovalbumin-induced murine asthma by co-exposure to desert-dust and organic chemicals: an animal model study. *Environmental health : a global access science source*. 2014;13:83.

Ren Y, Ichinose T, He M, Song Y, Yoshida Y, Yoshida S, et al. Enhancement of OVA-induced murine lung eosinophilia by co-exposure to contamination levels of LPS in Asian sand dust and heated dust. *Allergy, asthma, and clinical immunology : official journal of the Canadian Society of Allergy and Clinical Immunology*. 2014;10(1):30.

Renner HW. The question of a combined effect of a chemical mutagen and radiation sterilized feed in mutagenicity and reproduction tests in the mouse. *Food and cosmetics toxicology*. 1975;13(4):427-31.

Renwick A. Combination toxicology and interactions of additives. *Voprosy pitaniia*. 2000;69(3):32-7.

Renwick A. Compounds sharing the same mechanisms of action: combination toxicology. *Voprosy pitaniia*. 2002;71(1):21-8.

Revsikoi IK, Davydov OV, Zherdev GM. Reaction of the sound analyzer to combined exposure to noise, elevated temperature and carbon monoxide. *Vestnik otorinolaringologii*. 1984(4):14-7.

Reynders H, Van Campenhout K, Bervoets L, De Coen WM, Blust R. Dynamics of cadmium accumulation and effects in common carp (*Cyprinus carpio*) during simultaneous exposure to water and food (*Tubifex tubifex*). *Environmental toxicology and chemistry*. 2006;25(6):1558-67.

Rezvaia SP, Khanson KP. Postradiation DNA repair in mammalian cells in combined exposure to hyperthermia, 8-bromocaffeine and actinomycin D. *Radiobiologia*. 1981;21(3):326-9.

Riabichenko EV, Shcheglovitova ON, Bondarenko VM, Ezepchuk IV. The production of inflammation mediators by mouse peritoneal cells under conditions of combined exposure to staphylococcal enterotoxin and lipopolysaccharide. *Zhurnal mikrobiologii, epidemiologii, i immunobiologii*. 1999(6):21-4.

Ribeiro F, Ferreira NCG, Ferreira A, Soares AMVM, Loureiro S. Is ultraviolet radiation a synergistic stressor in combined exposures? The case study of *Daphnia magna* exposure to UV and carbendazim. *Aquatic toxicology (Amsterdam, Netherlands)*. 2011;102(1-2):114-22.

Ribeiro-Carvalho A, Lima CS, Medeiros AH, Siqueira NR, Filgueiras CC, Manhaes AC, et al. Combined exposure to nicotine and ethanol in adolescent mice: effects on the central cholinergic systems during short and long term withdrawal. *Neuroscience*. 2009;162(4):1174-86.

Richter J, Meister A, Bluethner R, Seidel H. Subjective evaluation of isolated and combined exposure to whole-body vibration and noise by means of cross-modality matching. *Activitas nervosa superior*. 1988;30(1):47-51.

Richter M, Escher BI. Mixture toxicity of reactive chemicals by using two bacterial growth assays as indicators of protein and DNA damage. *Environmental science & technology*. 2005;39(22):8753-61.

Roach W, Thomas R, Buffington G, Polhamus G, Notabartolo J, DiCarlo C, et al. Simultaneous Exposure Using 532 and 860 nm lasers for visible lesion thresholds in the rhesus retina. *Health physics*. 2006;90(3):241-9.

Robertson JM, Koval JJ. Co-carcinogenic effect of carbon black ingestion with dietary fat on the development of colon tumor in rats. *Toxicology letters*. 1989;48(3):317-20.

Ronne M. Fluorouracil synchronization of human bone marrow cultures. In vitro induction of high resolution R-banding by simultaneous exposure to 5-bromodeoxyuridine/Hoechst 33258. *Anticancer research*. 1984;4(4-5):279-81.

Rosal R, Rodea-Palomares I, Boltes K, Fernandez-Pinas F, Leganes F, Petre A. Ecotoxicological assessment of surfactants in the aquatic environment: combined toxicity of docusate sodium with chlorinated pollutants. *Chemosphere*. 2010;81(2):288-93.

Roux E, Duvert M, Marthan R. Combined effect of chronic hypoxia and in vitro exposure to gas pollutants on airway reactivity. *American journal of physiology Lung cellular and molecular physiology*. 2002;283(3):L628-35.

Roy U, Bulot C, Honer zu Bentrup K, Mondal D. Specific increase in MDR1 mediated drug-efflux in human brain endothelial cells following co-exposure to HIV-1 and saquinavir. *PloS one*. 2013;8(10):e75374.

Ruan CC. The co-mutagenic effect of metabolic extracts of fungi grown on the main grain in high incidence liver cancer areas--Fusui County. *Zhonghua yu fang yi xue za zhi [Chinese journal of preventive medicine]*. 1991;25(5):288-91.

Ruchirawat M, Navasumrit P, Settachan D. Exposure to benzene in various susceptible populations: co-exposures to 1,3-butadiene and PAHs and implications for carcinogenic risk. *Chemico-biological interactions*. 2010;184(1-2):67-76.

Rudnicki T. Combined effect of long-term and acute exposure to ionizing radiation on the proliferation of bone marrow cells in mice. *Polski przeglad radiologii*. 1985;49(3):174-7.

Rumiantsev GI, Novikov SM. Assessment of the nature of combined effects of harmful substances with regard to their cumulative characteristics. *Gigiena i sanitariia*. 1992(1):49-51.

Ruppe K, Enderlein G, Ruppe I, Wulke P. Combined effect of simultaneously occurring environmental industrial factors on the health status of exposed workers. *Zeitschrift fur die gesamte Hygiene und ihre Grenzgebiete*. 1987;33(7):349-52.

Ryan DA, Hubert JJ, Carter EM, Sprague JB, Parrott J. A reduced-rank multivariate regression approach to aquatic joint toxicity experiments. *Biometrics*. 1992;48(1):155-62.

Rydzynski K, Korsak Z, Jedlinska U, Sokal JA. The toxic effects of combined exposure to toluene and m-xylene in animals. IV. Liver ultrastructure after subchronic inhalatory exposure. *Polish journal of occupational medicine and environmental health*. 1992;5(1):35-42.

Rylander R, Sjostrand M, Bergstrom R. Free lung cell response after combined exposure to cigarette smoke and industrial dusts. *Toxicology*. 1979;12(3):211-20.

Saleem U, Ejaz S, Ashraf M, Omer MO, Altaf I, Batool Z, et al. Mutagenic and cytotoxic potential of Endosulfan and Lambda-cyhalothrin - in vitro study describing individual and combined effects of pesticides. *Journal of environmental sciences (China)*. 2014;26(7):1471-9.

Salnikow K, Li X, Lippmann M. Effect of nickel and iron co-exposure on human lung cells. *Toxicology and applied pharmacology*. 2004;196(2):258-65.

Salovsky P, Shopova V. Synergic lung changes in rats receiving combined exposure to paraquat and ionizing radiation. *Environmental research*. 1993;60(1):44-54.

Salyamon LS. The role of inflammation in the mechanism of carcinogenic, co-carcinogenic and certain anti-carcinogenic effects. *Problems of oncology Voprosy onkologii*. 1961;7(5):44-50.

Sanchez DJ, Belles M, Albina ML, Sirvent JJ, Domingo JL. Nephrotoxicity of simultaneous exposure to mercury and uranium in comparison to individual effects of these metals in rats. *Biological trace element research*. 2001;84(1-3):139-54.

Sannino A, Di Costanzo G, Brescia F, Sarti M, Zeni O, Juutilainen J, et al. Human fibroblasts and 900 MHz radiofrequency radiation: evaluation of DNA damage after exposure and co-exposure to 3-chloro-4-(dichloromethyl)-5-hydroxy-2(5h)-furanone (MX). *Radiation research*. 2009;171(6):743-51.

Sano H, Matsunobu S, Abe T, Terashima Y. Combined effects of diet and cold exposure on insulin responsiveness to glucose and tissue responsiveness to insulin in sheep. *Journal of animal science*. 1992;70(11):3514-20.

Saric M, Piasek M. Environmental exposure to manganese and combined exposure to gaseous upper respiratory irritants: mechanism of action and adverse health effects. *Reviews on environmental health*. 2000;15(4):413-9.

Savchenkov MF, Lemeshevskaja EP, Katul'skii IN, Benemanskii VV, Zhukova EV, Pogorelova IG, et al. Combined effects caused by chronic exposure to vinyl chloride and dichloroethane. *Meditcina truda i promyshlennaia ekologiia*. 2001(1):23-6.

Schleier JJ, Peterson RKD. The joint toxicity of type I, II, and nonester pyrethroid insecticides. *Journal of economic entomology*. 2012;105(1):85-91.

Schmidt SN, Holmstrup M, Smith KEC, Mayer P. Passive dosing of polycyclic aromatic hydrocarbon (PAH) mixtures to terrestrial springtails: linking mixture toxicity to chemical activities, equilibrium lipid concentrations, and toxic units. *Environmental science & technology*. 2013;47(13):7020-7.

Schnell S, Bols NC, Barata C, Porte C. Single and combined toxicity of pharmaceuticals and personal care products (PPCPs) on the rainbow trout liver cell line RTL-W1. *Aquatic toxicology (Amsterdam, Netherlands)*. 2009;93(4):244-52.

Schoen ED. Statistical designs in combination toxicology: a matter of choice. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1996;34(11-12):1059-65.

Schoen H, Magnus H. Homogenization of unequally darkened roentgenograms; comment on W. Buchholz work: on simultaneous exposure of roentgenograms by means of equalizing foils. *Fortschritte auf dem Gebiete der Rontgenstrahlen*. 1953;79(2):241-4.

Schuler LJ, Landrum PF, Harwood AD, Tripp EM, Lydy MJ. Joint toxicity of fluoranthene and pentachlorobenzene to *Hyalella azteca* and *Chironomus dilutus*. *Chemosphere*. 2009;77(3):399-403.

Schuler LJ, Trimble AJ, Belden JB, Lydy MJ. Joint toxicity of triazine herbicides and organophosphate insecticides to the midge *Chironomus tentans*. *Archives of environmental contamination and toxicology*. 2005;49(2):173-7.

Schuller HM, McGavin MD, Orloff M, Riechert A, Porter B. Simultaneous exposure to nicotine and hyperoxia causes tumors in hamsters. *Laboratory investigation; a journal of technical methods and pathology*. 1995;73(3):448-56.

Schultz K, Janik H, Mohr T, Munzberger E, Stoll R. Transient shift in hearing threshold in simultaneous exposure to noise and postural activities. *Zeitschrift fur die gesamte Hygiene und ihre Grenzgebiete*. 1989;35(8):498-502.

- Schulz R, Dabrowski JM. Combined effects of predatory fish and sublethal pesticide contamination on the behavior and mortality of mayfly nymphs. *Environmental toxicology and chemistry*. 2001;20(11):2537-43.
- Scott BR. Theoretical models for estimating dose-effect relationships after combined exposure to cytotoxicants. *Bulletin of mathematical biology*. 1983;45(3):323-45.
- Sedov AV, Surovtsev NA, Lukicheva TA, Beliakova IP. Tactics of protection of humans in accidents associated with combined exposure to chemical and physical factors. *Medsina truda i promyshlennaia ekologiia*. 1999(12):34-7.
- Seidel H, Bluthner R, Martin J, Menzel G, Panuska R, Ullsperger P. Effects of isolated and combined exposures to whole-body vibration and noise on auditory-event related brain potentials and psychophysical assessment. *European journal of applied physiology and occupational physiology*. 1992;65(4):376-82.
- Seidel H, Harazin B, Pavlas K, Sroka C, Richter J, Bluthner R, et al. Isolated and combined effects of prolonged exposures to noise and whole-body vibration on hearing, vision and strain. *International archives of occupational and environmental health*. 1988;61(1-2):95-106.
- Seidelin M, Brauner CJ, Jensen FB, Madsen SS. Vacuolar-type H(+)-ATPase and Na⁺, K(+)-ATPase expression in gills of Atlantic salmon (*Salmo salar*) during isolated and combined exposure to hyperoxia and hypercapnia in fresh water. *Zoological science*. 2001;18(9):1199-205.
- Seiji K, Inoue O, Jin C, Liu YT, Cai SX, Ohashi M, et al. Dose-excretion relationship in tetrachloroethylene-exposed workers and the effect of tetrachloroethylene co-exposure on trichloroethylene metabolism. *American journal of industrial medicine*. 1989;16(6):675-84.
- Setala K, Holsti P, Lundbom S. Criteria for the evaluation of canceration dangers; co-carcinogenic action. *Acta - Unio Internationalis Contra Cancrum*. 1957;13(2):280-9.
- Shafirkin AV, Mukhamedieva LN, Tatarkin SV, Barantseva MI. Evaluation of the risk of delayed adverse effects of chronic combined exposure to radiation and chemical factors with the purpose to ensure safety in orbital and exploration space missions. *Aviakosmicheskaia i ekologicheskai meditsina = Aerospace and environmental medicine*. 2012;46(1):23-9.
- Shan Y, Lin J, Xu P, Zeng M, Lin H, Yan H. The combined effect of hypertension and type 2 diabetes mellitus on aortic stiffness and endothelial dysfunction: an integrated study with high-resolution MRI. *Magnetic resonance imaging*. 2014;32(3):211-6.
- Shang Y, Jiang Y-T, Zhang L, Li Y. Combined effects of 1-nitropyrene and 1,2-naphthoquinone on cytotoxicity and DNA damage in A549 cells. *Huan jing ke xue = Huanjing kexue*. 2014;35(11):4345-51.
- Sharma R, Ahuja M, Panda NK, Khullar M. Combined effect of smoking and polymorphisms in tobacco carcinogen-metabolizing enzymes CYP1A1 and GSTM1 on the head and neck cancer risk in North Indians. *DNA and cell biology*. 2010;29(8):441-8.
- Shaw PJ, Ganey PE, Roth RA. Tumor necrosis factor alpha is a proximal mediator of synergistic hepatotoxicity from trovafloxacin/lipopolysaccharide coexposure. *The Journal of pharmacology and experimental therapeutics*. 2009;328(1):62-8.
- Sheerin NS, Monk PN, Aslam M, Thurston H. Simultaneous exposure to lead, arsenic and mercury from Indian ethnic remedies. *The British journal of clinical practice*. 1994;48(6):332-3.
- Shen P, Xi Y-L, Zhang Y, Zhou B, Wang M. Combined toxicity of copper and cadmium to cladoceran *Moina marocopa*. *Ying yong sheng tai xue bao = The journal of applied ecology*. 2012;23(10):2855-62.
- Shibata E, Huang J, Ono Y, Hisanaga N, Iwata M, Saito I, et al. Changes in urinary n-hexane metabolites by co-exposure to various concentrations of methyl ethyl ketone and fixed n-hexane levels. *Archives of toxicology*. 1990;64(2):165-8.

Shibata E, Johanson G, Lof A, Ernstgard L, Gullstrand E, Sigvardsson K. Changes in n-hexane toxicokinetics in short-term single exposure due to co-exposure to methyl ethyl ketone in volunteers. *International archives of occupational and environmental health*. 2002;75(6):399-405.

Shibuya N, Ohta T, Sakai H, Takagi S, Magara J, Yamamoto M. Co-mutagenic activity of phenoxyherbicides MCPA- and MCPB-ethylester in the Ames assay. *The Tohoku journal of experimental medicine*. 1990;160(2):167-8.

Shields PG, McCunney RJ, Chase KH. Confined space hazards: combined exposure to styrene, fiberglass, and silica. *Journal of occupational and environmental medicine*. 1995;37(2):185-8.

Shinpo K, Kikuchi S, Sasaki H, Moriwaka F, Tashiro K. Effect of 1,25-dihydroxyvitamin D(3) on cultured mesencephalic dopaminergic neurons to the combined toxicity caused by L-buthionine sulfoximine and 1-methyl-4-phenylpyridine. *Journal of neuroscience research*. 2000;62(3):374-82.

Shirakawa T, Kusaka Y, Morimoto K. Combined effect of smoking habits and occupational exposure to hard metal on total IgE antibodies. *Chest*. 1992;101(6):1569-76.

Shtenberg AI, Torchinskii AM. Evaluation of experimental data on teratogenic properties of substances foreign to the body in their combined effect. *Gigiena i sanitariia*. 1976(12):32-5.

Shubik VM, Zykova IA. Immunological changes in combined exposure to chronic gamma irradiation in small doses and to toxic substances. *Meditinskaiia radiologiiia*. 1981;26(9):44-8.

Shukla Y, Baqar SM, Mehrotra NK. Carcinogenic and co-carcinogenic studies of thiram on mouse skin. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1996;34(3):283-9.

Shukla Y, Singh A, Mehrotra NK. Evaluation of carcinogenic and co-carcinogenic potential Quinalphos in mouse skin. *Cancer letters*. 2000;148(1):1-7.

Siddiqui MA, Kashyap MP, Al-Khedhairi AA, Musarrat J, Khanna VK, Yadav S, et al. Protective potential of 17beta-estradiol against co-exposure of 4-hydroxynonenal and 6-hydroxydopamine in PC12 cells. *Human & experimental toxicology*. 2011;30(8):860-9.

Sidorov VF, Pershin SB, Frenkel ID, Bobkova AS, Korovkina EG. The immunological and hormonal effects of combined exposure to a bitemporal ultrahigh-frequency electrical field and to decimeter waves at different sites. *Voprosy kurortologii, fizioterapii, i lechebnoi fizicheskoi kultury*. 1992(2):3-7.

Silbermann M, Shurtz-Swirski R, Lewinson D, Shenzer P, Mayer H. In vitro response of neonatal condylar cartilage to simultaneous exposure to the parathyroid hormone fragments 1-34, 28-48, and 53-84 hPTH. *Calcified tissue international*. 1991;48(4):260-6.

Silins I, Hogberg J. Combined toxic exposures and human health: biomarkers of exposure and effect. *International journal of environmental research and public health*. 2011;8(3):629-47.

Silva LF, Mendes R. Combined exposure to noise and vibration and its effects on workers' hearing. *Revista de saude publica*. 2005;39(1):9-17.

Silverman SJ, Andrews AW. Bile acids: co-mutagenic activity in the Salmonella-mammalian-microsome mutagenicity test: brief communication. *Journal of the National Cancer Institute*. 1977;59(5):1557-9.

Simmons JE. Application of physiologically based pharmacokinetic modelling to combination toxicology. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1996;34(11-12):1067-73.

Sinczuk-Walczak H, Szymczak M, Aniolczyk H, Brzezniacki S, Razniewska G, Trzcinka-Ochocka M, et al. The effect of combined exposure to chemical and physical factors on the nervous system during aluminum production: a preliminary finding. *Medycyna pracy*. 2006;57(1):7-13.

Singh KP, Lopez-Guerrero JA, Llombart-Bosch A, Roy D. Age, sex and co-exposure to N-ethyl-N-nitrosourea influence mutations in the Alu repeat sequences in diethylstilbestrol-induced kidney tumors in Syrian hamsters. *Mutagenesis*. 2004;19(1):67-73.

Singh MP, Ram KR, Mishra M, Shrivastava M, Saxena DK, Chowdhuri DK. Effects of co-exposure of benzene, toluene and xylene to *Drosophila melanogaster*: alteration in hsp70, hsp60, hsp83, hsp26, ROS generation and oxidative stress markers. *Chemosphere*. 2010;79(5):577-87.

Singh ND, Sharma AK, Dwivedi P, Telang AG, Kumar M, Patil RD. Studies on apoptotic changes in combined toxicity of citrinin and endosulfan in pregnant wistar rats and their fetuses. *Toxicology international*. 2012;19(2):138-43.

Skoczynska A, Smolik R, Milian A. The effect of combined exposure to lead and cadmium on the concentration of zinc and copper in rat tissues. *International journal of occupational medicine and environmental health*. 1994;7(1):41-9.

Skoczynska A, Smolik R. The effect of combined exposure to lead and cadmium on serum lipids and lipid peroxides level in rats. *International journal of occupational medicine and environmental health*. 1994;7(3):263-71.

Sliwinska-Kowalska M, Zamyslowska-Szmytko E, Szymczak W, Kotylo P, Fiszer M, Wesolowski W, et al. Exacerbation of noise-induced hearing loss by co-exposure to workplace chemicals. *Environmental toxicology and pharmacology*. 2005;19(3):547-53.

Sliwinska-Kowalska M, Zamyslowska-Szmytko E, Szymczak W, Kotylo P, Fiszer M, Wesolowski W, et al. Ototoxic effects of occupational exposure to styrene and co-exposure to styrene and noise. *Journal of occupational and environmental medicine*. 2003;45(1):15-24.

Smith JC, Schaeffer RW. Development of water and saccharin preference after simultaneous exposures to saccharin solution and gamma rays. *Journal of comparative and physiological psychology*. 1967;63(3):434-8.

Smoliakova GP, Moiseev VP. Morphologic changes in the retina experimentally induced by noradrenaline and combined exposure to noradrenaline and light of moderate intensity. *Vestnik oftalmologii*. 1986;102(5):43-6.

Snoeijs T, Dauwe T, Pinxten R, Darras VM, Arckens L, Eens M. The combined effect of lead exposure and high or low dietary calcium on health and immunocompetence in the zebra finch (*Taeniopygia guttata*). *Environmental pollution (Barking, Essex : 1987)*. 2005;134(1):123-32.

Sofyan A, Price DJ, Birge WJ. Effects of aqueous, dietary and combined exposures of cadmium to *Ceriodaphnia dubia*. *The Science of the total environment*. 2007;385(1-3):108-16.

Sokal JA, Korsak Z. The additivity rule in the evaluation of health effects of combined exposure to solvents--does it hold? *Polish journal of occupational medicine*. 1990;3(3):333-6.

Sokolov EI, Zaev AP, Khovanskaia TP, Velichkina SV, Zhizhina SA, Morozova TP. The hormonal reaction of the healthy subject to combined exposure to the insulin test and physical loading. *Fiziologiya cheloveka*. 1990;16(4):130-4.

Son JY, Kang YJ, Kim KS, Kim TH, Lim SK, Lim HJ, et al. Evaluation of renal toxicity by combination exposure to melamine and cyanuric Acid in male sprague-dawley rats. *Toxicological research*. 2014;30(2):99-107.

Song M, Wang F, Zeng L, Yin J, Wang H, Jiang G. Co-exposure of carboxyl-functionalized single-walled carbon nanotubes and 17alpha-ethinylestradiol in cultured cells: effects on bioactivity and cytotoxicity. *Environmental science & technology*. 2014;48(23):13978-84.

Song Y-F, Luo Z, Pan Y-X, Liu X, Huang C, Chen Q-L. Effects of copper and cadmium on lipogenic metabolism and metal element composition in the javelin goby (*Synechogobius hasta*) after single and combined exposure. *Archives of environmental contamination and toxicology*. 2014;67(2):167-80.

Song Z, Vijayaraghavan S, Sladek CD. Simultaneous exposure to ATP and phenylephrine induces a sustained elevation in the intracellular calcium concentration in supraoptic neurons. *American journal of physiology Regulatory, integrative and comparative physiology*. 2006;291(1):R37-45.

Sorrentino C, Roy NK, Courtenay SC, Wirgin I. Co-exposure to metals modulates CYP1A mRNA inducibility in Atlantic tomcod *Microgadus tomcod* from two populations. *Aquatic toxicology (Amsterdam, Netherlands)*. 2005;75(3):238-52.

Sosa S, Ardizzone M, Beltramo D, Vita F, Dell'Ovo V, Barreras A, et al. Repeated oral co-exposure to yessotoxin and okadaic acid: a short term toxicity study in mice. *Toxicology : official journal of the International Society on Toxinology*. 2013;76:94-102.

Sosedova LM, Rukavishnikov VS. Risk assessment of combined exposure to environmental biological and chemical factors on man. *Gigiena i sanitariia*. 2010(5):75-9.

Speijers GJA, Speijers MHM. Combined toxic effects of mycotoxins. *Toxicology letters*. 2004;153(1):91-8.

Speit G, Linsenmeyer R, Duong G, Bausinger J. Investigations on potential co-mutagenic effects of formaldehyde. *Mutation research*. 2014;760:48-56.

Spliid H, Torslov J. Statistical analysis of joint toxicity in biological growth experiments. *Ecotoxicology and environmental safety*. 1994;28(2):181-92.

Sraubaev EN, Serik B. Development of technologies of population health management in Kazakhstan based on an integrated assessment of the combined exposure to environmental factors. *Gigiena i sanitariia*. 2013(5):73-5.

Srikanth K, Ahmad I, Rao JV, Trindade T, Duarte AC, Pereira E. Modulation of glutathione and its dependent enzymes in gill cells of *Anguilla anguilla* exposed to silica coated iron oxide nanoparticles with or without mercury co-exposure under in vitro condition. *Comparative biochemistry and physiology Toxicology & pharmacology : CBP*. 2014;162:7-14.

Sroczyński J, Skwarna J, Rudzki H. Effect of simultaneous exposure to fluorine and manganese on health status of workers. *Medycyna pracy*. 1991;42(6):441-6.

Stetkiewicz J, Wronska-Nofer T, Klimczak J, Stetkiewicz I. Metabolic interaction and neurological effect of combined exposure to acrylamide and ethanol. *Polish journal of occupational medicine*. 1988;1(2):127-36.

Stewart PW, Burright RG, Donovan PJ. DMSA chelation during co-exposure to lead: increased locomotor activity in lead-exposed mice but not controls. *Physiology & behavior*. 1995;57(5):863-7.

Strachan G, Preston S, Maciel H, Porter AJ, Paton GI. Use of bacterial biosensors to interpret the toxicity and mixture toxicity of herbicides in freshwater. *Water research*. 2001;35(14):3490-5.

Strandberg L. COMPARISON OF SO₂ ABSORPTION IN THE RESPIRATORY TRACT OF THE RABBIT WITH AND WITHOUT SIMULTANEOUS EXPOSURE TO CARBON PARTICLES. PRELIMINARY REPORT. *Nordisk hygienisk tidskrift*. 1964;45:24-30.

Streffer C, Muller WU. Dose-effect relationships and general mechanisms of combined exposures. *International journal of radiation biology and related studies in physics, chemistry, and medicine*. 1987;51(6):961-9.

- Stride E, Porter C, Prieto AG, Pankhurst Q. Enhancement of microbubble mediated gene delivery by simultaneous exposure to ultrasonic and magnetic fields. *Ultrasound in medicine & biology*. 2009;35(5):861-8.
- Su L, Zhang X, Yuan X, Zhao Y, Zhang D, Qin W. Evaluation of joint toxicity of nitroaromatic compounds and copper to *Photobacterium phosphoreum* and QSAR analysis. *Journal of hazardous materials*. 2012;241-242:450-5.
- Su LM, Zhao YH, Yuan X, Mu CF, Wang N, Yan JC. Evaluation of combined toxicity of phenols and lead to *Photobacterium phosphoreum* and quantitative structure-activity relationships. *Bulletin of environmental contamination and toxicology*. 2010;84(3):311-4.
- Sukhova TI, Sobolev AI. The assessment of combined exposure to radiation and chemical factors based on the study of the morbidity of personnel in radiation-chemical manufacture. *Meditsina truda i promyshlennaia ekologiia*. 1994(9):14-7.
- Sures B, Lutz I, Kloas W. Effects of infection with *Anguillicola crassus* and simultaneous exposure with Cd and 3,3',4,4',5-pentachlorobiphenyl (PCB 126) on the levels of cortisol and glucose in European eel (*Anguilla anguilla*). *Parasitology*. 2006;132(Pt 2):281-8.
- Suvorov GA, Sukhorukova IA, Ovakimov VG, Denisov EI. Physiological and hygienic evaluation of combined effects of harmful factors in metallurgy. *Gigiena truda i professional'nye zabolvaniia*. 1990(8):36-8.
- Suzuki T, Yanagiba Y, Suda M, Wang R-S. Assessment of the genotoxicity of 1,2-dichloropropane and dichloromethane after individual and co-exposure by inhalation in mice. *Journal of occupational health*. 2014;56(3):205-14.
- Syberg K, Elleby A, Pedersen H, Cedergreen N, Forbes VE. Mixture toxicity of three toxicants with similar and dissimilar modes of action to *Daphnia magna*. *Ecotoxicology and environmental safety*. 2008;69(3):428-36.
- Taits MI, Dudina TV, Kandybo TS, Elkina AI. Mediator processes in the brain structures in the late periods after external and combined exposure to ionizing radiation. *Radiobiologiia*. 1990;30(2):276-9.
- Takabatake E, Fujita M, Sawa Y. Combined effects of polychlorinated biphenyls and methylmercury on hepatic microsomal monooxygenases and the hepatotoxic action of bromobenzene. *Journal of pharmacobio-dynamics*. 1980;3(9):463-9.
- Takeuchi Y, Hisanaga N, Ono Y, Shibata E, Saito I, Iwata M. Modification of metabolism and neurotoxicity of hexane by co-exposure of toluene. *International archives of occupational and environmental health*. 1993;65(1 Suppl):S227-30.
- Tan Q, Gu C, Lu L, Chen S, Zeng W, Liu Y. Effect of combined exposure to organic solvents in oil paint on health of painters. *Zhonghua lao dong wei sheng zhi ye bing za zhi = Zhonghua laodong weisheng zhiyebing zazhi = Chinese journal of industrial hygiene and occupational diseases*. 2014;32(4):276-9.
- Tan X, Yang X, Huang Q, Li N, Hao W, Huang J. Study of three methods on joint toxicity of diazinon, propoxur and bisphenol A on proliferation of mouse RAW264.7 cell. *Wei sheng yan jiu = Journal of hygiene research*. 2011;40(2):191-5.
- Tandon SK, Flora SJ. Dose and time effects of combined exposure to lead and ethanol on lead body burden and some neuronal, hepatic and haematopoietic biochemical indices in the rat. *Journal of applied toxicology : JAT*. 1989;9(5):347-52.
- Tandon SK, Tewari PC. Effect of co-exposure to ethanol and cadmium in rats. *Bulletin of environmental contamination and toxicology*. 1987;39(4):633-40.

- Tang JYM, Escher BI. Realistic environmental mixtures of micropollutants in surface, drinking, and recycled water: herbicides dominate the mixture toxicity toward algae. *Environmental toxicology and chemistry*. 2014;33(6):1427-36.
- Tapbergenov SO, Zhetpisbaev BA, Ilderbayev OZ, Zhetpisbaeva HS, Olzhayeva RR, Prozor II, et al. Free radical oxidation in rats in the delayed period after combined exposure to dust and radiation. *Bulletin of experimental biology and medicine*. 2013;154(6):747-9.
- Tardif R, Lapare S, Plaa GL, Brodeur J. Effect of simultaneous exposure to toluene and xylene on their respective biological exposure indices in humans. *International archives of occupational and environmental health*. 1991;63(4):279-84.
- Tartakovskaia LI, Bykov NA, Gridin NM. Arsenic accumulation and elimination in simultaneous exposure to vibration in miners. *Gigiena truda i professional'nye zabolevaniia*. 1979(8):41-2.
- Tatarkin SV, Shafirkin AV, Mukhamedieva LN, Barantseva MI, Ivanova SM. Adaptation processes in mice during chronic combined exposure to radiation and chemical compounds (acetone, ethanol, acetaldehyde) innate to exploration missions. *Aviakosmicheskaiia i ekologicheskaiia meditsina = Aerospace and environmental medicine*. 2012;46(3):20-7.
- Teles M, Gravato C, Pacheco M, Santos MA. Juvenile sea bass biotransformation, genotoxic and endocrine responses to beta-naphthoflavone, 4-nonylphenol and 17 beta-estradiol individual and combined exposures. *Chemosphere*. 2004;57(2):147-58.
- Tenchova VB, Pantev TP. Changes in hemopoiesis in the rat as a result of combined exposure to acceleration, irradiation and radiation-modifying agents. *Kosmicheskaiia biologiiia i aviakosmicheskaiia meditsina*. 1987;21(2):85-6.
- Testai E. Risk assessment for human health associated to combined exposures and metabolic factors of individual susceptibility. *Epidemiologia e prevenzione*. 2009;33(3 Suppl 1):69-76.
- The European Late Effects Project (EULEP) symposium on effects after combined exposure to ionizing radiation and chemical substances. Pisa, Italy, 19 September 1986. Proceedings. *International journal of radiation biology and related studies in physics, chemistry, and medicine*. 1987;51(6):959-1110.
- Thomulka KW, Lange JH. A mixture toxicity study employing combinations of tributyltin chloride, dibutyltin dichloride, and tin chloride using the marine bacterium *Vibrio harveyi* as the test organism. *Ecotoxicology and environmental safety*. 1996;34(1):76-84.
- Thomulka KW, Lange JH. Mixture toxicity of nitrobenzene and trinitrobenzene using the marine bacterium *Vibrio harveyi* as the test organism. *Ecotoxicology and environmental safety*. 1997;36(2):189-95.
- Thuvander A, Wikman C, Gadhasson I. In vitro exposure of human lymphocytes to trichothecenes: individual variation in sensitivity and effects of combined exposure on lymphocyte function. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1999;37(6):639-48.
- Tian D, Lin Z, Zhou X, Yin D. The underlying toxicological mechanism of chemical mixtures: a case study on mixture toxicity of cyanogenic toxicants and aldehydes to *Photobacterium phosphoreum*. *Toxicology and applied pharmacology*. 2013;272(2):551-8.
- Timchenko OI, Paran'ko NM, Shantyr EE, Kuz'menko SD. The cytogenetic effects of separate and combined exposures to a manganese dioxide aerosol and wide-band noise. *Gigiena i sanitariia*. 1991(11):70-2.
- Timme-Laragy AR, Cockman CJ, Matson CW, Di Giulio RT. Synergistic induction of AHR regulated genes in developmental toxicity from co-exposure to two model PAHs in zebrafish. *Aquatic toxicology (Amsterdam, Netherlands)*. 2007;85(4):241-50.

- Tipping E, Lofts S. Metal mixture toxicity to aquatic biota in laboratory experiments: application of the WHAM-FTOX model. *Aquatic toxicology* (Amsterdam, Netherlands). 2013;142-143:114-22.
- Tiwari S, Gupta SK, Kumar K, Trivedi R, Godbole MM. Simultaneous exposure of excess fluoride and calcium deficiency alters VDR, CaR, and calbindin D 9 k mRNA levels in rat duodenal mucosa. *Calcified tissue international*. 2004;75(4):313-20.
- Tjornehoj K, Uttenthal A, Viuff B, Larsen LE, Rontved C, Ronsholt L. An experimental infection model for reproduction of calf pneumonia with bovine respiratory syncytial virus (BRSV) based on one combined exposure of calves. *Research in veterinary science*. 2003;74(1):55-65.
- Tkhabisimova MD, Komarova LN, Petin VG. Dark recovery of diploid yeast cells after simultaneous exposure to UV-irradiation and hyperthermia. *Tsitologiya*. 2002;44(6):555-60.
- Totsuka Y, Ushiyama H, Ishihara J, Sinha R, Goto S, Sugimura T, et al. Quantification of the co-mutagenic beta-carbolines, norharman and harman, in cigarette smoke condensates and cooked foods. *Cancer letters*. 1999;143(2):139-43.
- Toyooka T, Ibuki Y. Co-exposure to benzo a pyrene and UVA induces phosphorylation of histone H2AX. *FEBS letters*. 2005;579(28):6338-42.
- Travis CC, Fox MT, Simmons WM, Lyon BF. Co-exposure to gasoline vapor decreases benzene metabolism in Fischer-344 rats. *Toxicology letters*. 1992;62(2-3):231-40.
- Tregub PP, Kulikov VP, Bepalov AG, Vvedensky AJ, Osipov IS. Neuroprotective effects of individual or combined exposure to hypoxia and hypercapnia in the experiment. *Bulletin of experimental biology and medicine*. 2013;155(3):327-9.
- Trinos MS, Oderii EA. Blood circulation in the liver in combined exposure to lead and electromagnetic fields. *Vrachebnoe delo*. 1982(8):109-11.
- Trinos MS. Incidence of digestive organ diseases in workers with combined exposure to lead and UHF-range electromagnetic energy. *Gigiena i sanitariia*. 1982(9):93-4.
- Tsang WT. Theoretical modeling of the simultaneous exposure and development (SED) process of a positive photoresist. *Applied optics*. 1977;16(7):1918-30.
- Tsocheva NT, Kadiiska MB, Poljakova-Krusteva OT, Krustev LP, Yanev SS, Stoytchev TS. Combined effect of fascioliasis and diethylnitrosamine carcinogenesis on the activity of the rat liver monooxygenase system. *Comparative biochemistry and physiology C, Comparative pharmacology and toxicology*. 1992;101(3):475-9.
- Tsubono Y, Koizumi Y, Nakaya N, Fujita K, Takahashi H, Hozawa A, et al. Health practices and mortality in Japan: combined effects of smoking, drinking, walking and body mass index in the Miyagi Cohort Study. *Journal of epidemiology*. 2004;14 Suppl 1:S39-45.
- Tsutsumi K, Iwatake H, Suzuki T. An experimental model of multistep laryngeal carcinogenesis: combined effect of human papillomavirus type 16 genome and N-methyl-N'-nitro-N-nitrosoguanidine. *Acta oto-laryngologica Supplementum*. 1996;522:89-93.
- Tufan AC, Akdogan I, Turgut G, Adiguzel E. Increased tunel positive cells in CA1, CA2, and CA3 subfields of rat hippocampus due to copper and ethanol co-exposure. *The International journal of neuroscience*. 2008;118(5):647-56.
- Turczynski B, Sroczynski J, Wegiel A, Kuleszyska G. Various plasma components and whole blood viscosity in workers exposed to combined effects of the work environment (mainly mechanical vibration and noise). *Polski tygodnik lekarski* (Warsaw, Poland : 1960). 1984;39(39):1281-3.

Turczynski B, Sroczynski J. Erythrocyte aggregation indicator and blood viscosity in workers exposed to combined effects of the work environment (mainly mechanical vibration and noise). *Polski tygodnik lekarski* (Warsaw, Poland : 1960). 1984;39(39):1285-8.

Turrina S, Neri C, De Leo D. Effect of combined exposure to carbon monoxide and cyanides in selected forensic cases. *Journal of clinical forensic medicine*. 2004;11(5):264-7.

Tyler Mehler W, Schuler LJ, Lydy MJ. Examining the joint toxicity of chlorpyrifos and atrazine in the aquatic species: *Lepomis macrochirus*, *Pimephales promelas* and *Chironomus tentans*. *Environmental pollution* (Barking, Essex : 1987). 2008;152(1):217-24.

Tyshko NV, Seliaskin KE, Mel'nik EA, Pashorina VA, Zhminchenko VM. The separate and combined effects of calcium pantothenate deficiency and cadmium intoxication on rat reproductive function. *Voprosy pitaniia*. 2012;81(1):33-43.

Uchendu C, Ambali SF, Ayo JO, Esievo KAN, Umosen AJ. Erythrocyte osmotic fragility and lipid peroxidation following chronic co-exposure of rats to chlorpyrifos and deltamethrin, and the beneficial effect of alpha-lipoic acid. *Toxicology reports*. 2014;1:373-8.

Uchiyama M, Chiba T, Noda K. Co-carcinogenic effect of DDT and PCB feeding on methylcholanthrene-induced chemical carcinogenesis. *Bulletin of environmental contamination and toxicology*. 1974;12(6):687-93.

Urnysheva VV, Kozlov MV, Shishkina LN. Effect of oxidative processes in lipids on the formation of the biological response during combined exposure to X-rays and chemical agents. *Radiatsionnaia biologii, radioecologii*. 2005;45(4):416-21.

Urrego F, Scuri M, Auais A, Mohtasham L, Piedimonte G. Combined effects of chronic nicotine and acute virus exposure on neurotrophin expression in rat lung. *Pediatric pulmonology*. 2009;44(11):1075-84.

Ushakov IB, Karpov VN. Changes in the permeability of the blood-brain barrier after combined exposure to gamma-radiation and a modified gas medium. *Radiobiologiya*. 1983;23(6):839-41.

Vainio H, Savolainen H, Pfaffli P. Biochemical and toxicological effects of combined exposure to 1,1,1-trichloroethane and trichloroethylene on rat liver and brain. *Xenobiotica; the fate of foreign compounds in biological systems*. 1978;8(3):191-6.

Valeriote FA, Baker DG. THE COMBINED EFFECTS OF THERMAL TRAUMA AND X-IRRADIATION ON EARLY MORTALITY. *Radiation research*. 1964;22:693-702.

Valic E, Waldhor T, Konnaris C, Michitsch A, Wolf C. Acquired dyschromatopsia in combined exposure to solvents and alcohol. *International archives of occupational and environmental health*. 1997;70(6):403-6.

van der Leeuw J, van der Graaf Y, Nathoe HM, de Borst GJ, Kappelle LJ, Visseren FLJ, et al. The separate and combined effects of adiposity and cardiometabolic dysfunction on the risk of recurrent cardiovascular events and mortality in patients with manifest vascular disease. *Heart (British Cardiac Society)*. 2014;100(18):1421-9.

van der Voet H, de Mul A, van Klaveren JD. A probabilistic model for simultaneous exposure to multiple compounds from food and its use for risk-benefit assessment. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2007;45(8):1496-506.

van Dormolen M, Hertog CA, van Dijk FJ, Kompier MA, Fortuin R. The quest for interaction: studies on combined exposure. *International archives of occupational and environmental health*. 1990;62(4):279-87.

van Vliet PCJ, de Goede RGM. Nematode-based risk assessment of mixture toxicity in a moderately polluted river floodplain in The Netherlands. *The Science of the total environment*. 2008;406(3):449-54.

van Wezel AP, de Vries DA, Sijm D, Opperhuizen A. Use of the lethal body burden in the evaluation of mixture toxicity. *Ecotoxicology and environmental safety*. 1996;35(3):236-41.

Vapaatalo H, Karppanen H. Combined toxicity of ethanol with chlorpromazine, diazepam, chlormethiazole or pentobarbital in mice. *Agents and actions*. 1969;1(2):43-5.

Varaksin AN, Katsnelson BA, Panov VG, Privalova LI, Kireyeva EP, Valamina IE, et al. Some considerations concerning the theory of combined toxicity: a case study of subchronic experimental intoxication with cadmium and lead. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2014;64:144-56.

Varetskii VV, Snezhko VV. The dynamic behavioral characteristics of rats in a maze after isolated and combined exposures to ionizing radiation and psychoemotional stress. *Radiobiologiya*. 1993;33(2):265-70.

Vatulina GG. Metabolic changes in rat muscle tissue after separate and combined exposure to iodine and strontium radioisotopes. *Radiobiologiya*. 1977;17(5):728-32.

Vellinger C, Felten V, Sornom P, Rousselle P, Beisel J-N, Usseglio-Polatera P. Behavioural and physiological responses of *Gammarus pulex* exposed to cadmium and arsenate at three temperatures: individual and combined effects. *PloS one*. 2012;7(6):e39153.

Verdina A, Zito R, Federico A, Falasca G, Galati R. Divergent synergic effects in carcinogenesis initiation by simultaneous exposure to two genotoxic carcinogens. In vivo (Athens, Greece). 2000;14(6):753-6.

Verma SK, Dua R, Gill KD. Impaired energy metabolism after co-exposure to lead and ethanol. *Basic & clinical pharmacology & toxicology*. 2005;96(6):475-9.

Verriopoulos G, Dimas S. Combined toxicity of copper, cadmium, zinc, lead, nickel, and chrome to the copepod *Tisbe holothuriae*. *Bulletin of environmental contamination and toxicology*. 1988;41(3):378-84.

Verriopoulos G, Moraitou-Apostolopoulou M, Milliou E. Combined toxicity of four toxicants (Cu, Cr, oil, oil dispersant) to *Artemia salina*. *Bulletin of environmental contamination and toxicology*. 1987;38(3):483-90.

Vetrova EG, Drozdova TE, Tigranian RA, Shul'zhenko EB. Energy-metabolism enzymes during combined exposure of the body to simulated weightlessness and gravitational overloads. *Kosmicheskaya biologiya i aviakosmicheskaya meditsina*. 1981;15(5):34-8.

Vettori MV, Goldoni M, Caglieri A, Poli D, Folesani G, Ceccatelli S, et al. Antagonistic effects of methyl-mercury and PCB153 on PC12 cells after a combined and simultaneous exposure. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 2006;44(9):1505-12.

Villarini M, Moretti M, Scassellati-Sforzolini G, Boccioli B, Pasquini R. Effects of co-exposure to extremely low frequency (50 Hz) magnetic fields and xenobiotics determined in vitro by the alkaline comet assay. *The Science of the total environment*. 2006;361(1-3):208-19.

Villeneuve DC, van Logten MJ, den Tonkelaar EM, Rauws AG, Kroes R, van Esch GJ. The combined effect of food restriction and parathion exposure in rats. *Archives of environmental contamination and toxicology*. 1978;7(1):37-45.

Vil'-Vil'iams IF, Shul'zhenko EB. Functional state of the cardiovascular system system during combined exposure to 28-day immersion, rotation in a short radius centrifuge, and physical loading on a bicycle ergometer. *Kosmicheskaya biologiya i aviakosmicheskaya meditsina*. 1980;14(2):42-5.

Vlachokostas C, Achillas C, Michailidou AV, Moussiopoulos N. Measuring combined exposure to environmental pressures in urban areas: an air quality and noise pollution assessment approach. *Environment international*. 2012;39(1):8-18.

- Vlachokostas C, Baniyas G, Athanasiadis A, Achillas C, Akylas V, Moussiopoulos N. Cense: a tool to assess combined exposure to environmental health stressors in urban areas. *Environment international*. 2014;63:1-10.
- Vodichenska T. The effect of chronic combined exposure to nickel and lead on the enzymatic indices in body uptake with the drinking water. *Problemi na khigienata*. 1992;17:48-56.
- Vodickova L, Frantik E, Vodickova A. Neutrotropic effects and blood levels of solvents at combined exposures: binary mixtures of toluene, o-xylene and acetone in rats and mice. *Central European journal of public health*. 1995;3(2):57-64.
- Vorontsova ZA, Dedov VI, Ushakov IB. Tissue basophils of the thyroid gland in separate and combined exposure to ionizing radiation and ethanol. *Aviakosmicheskaja i ekologicheskaja meditsina = Aerospace and environmental medicine*. 1997;31(3):39-43.
- Voskanian KS, Mitsyn GV, Gaevskii VN. Some specific effects of the combined exposure to gamma and laser radiations on survivability of mouse fibroblasts in vitro. *Aviakosmicheskaja i ekologicheskaja meditsina = Aerospace and environmental medicine*. 2009;43(2):32-6.
- Wahidulla S, Rajamanickam YR. Detection of DNA damage in fish *Oreochromis mossambicus* induced by co-exposure to phenanthrene and nitrite by ESI-MS/MS. *Environmental science and pollution research international*. 2010;17(2):441-52.
- Wakabayashi K, Nagao M, Kawachi T, Sugimura T. Co-mutagenic effect of norharman with N-nitrosamine derivatives. *Mutation research*. 1981;80(1):1-7.
- Walter H, Consolaro F, Gramatica P, Scholze M, Altenburger R. Mixture toxicity of priority pollutants at no observed effect concentrations (NOECs). *Ecotoxicology (London, England)*. 2002;11(5):299-310.
- Wang B, Yu G, Hu H, Wang L. Quantitative structure-activity relationships and mixture toxicity of substituted benzaldehydes to *Photobacterium phosphoreum*. *Bulletin of environmental contamination and toxicology*. 2007;78(6):503-9.
- Wang B, Zhao J-s, Yu Y-j, Wang X-d, Wang L-s. Quantitative structure-activity relationships and joint toxicity of substituted biphenyls. *Huan jing ke xue= Huanjing kexue*. 2004;25(3):89-93.
- Wang C, Lu G, Tang Z, Guo X. Quantitative structure-activity relationships for joint toxicity of substituted phenols and anilines to *Scenedesmus obliquus*. *Journal of environmental sciences (China)*. 2008;20(1):115-9.
- Wang CJ. Pathological study of the carcinogenic and co-carcinogenic effects of *Moniliformyces* culture on the esophagus and fore-stomach in mice. *Zhonghua bing li xue za zhi = Chinese journal of pathology*. 1987;16(2):147-9.
- Wang D, Liang D, Wang S, Hu B, Wei W. Individual and joint toxicity effects of Cu, Cr(III), and Cr(VI) on pakchoi: a comparison between solution and soil cultures. *Biological trace element research*. 2012;146(1):116-23.
- Wang F, Liu W, Jin Y, Dai J, Zhao H, Xie Q, et al. Interaction of PFOS and BDE-47 co-exposure on thyroid hormone levels and TH-related gene and protein expression in developing rat brains. *Toxicological sciences : an official journal of the Society of Toxicology*. 2011;121(2):279-91.
- Wang G-y, Zhou Q-x, Hu X-m, Hua T, Li F. Single and joint toxicity of perchloroethylene and cadmium on *Ctenopharyngodon idellus*. *Ying yong sheng tai xue bao = The journal of applied ecology*. 2007;18(5):1120-4.
- Wang M, Zhou Q. Single and joint toxicity of chlorimuron-ethyl, cadmium, and copper acting on wheat *Triticum aestivum*. *Ecotoxicology and environmental safety*. 2005;60(2):169-75.

- Wang P, Luo L, Ke L, Luan T, Tam NF-Y. Combined toxicity of polycyclic aromatic hydrocarbons and heavy metals to biochemical and antioxidant responses of free and immobilized *Selenastrum capricornutum*. *Environmental toxicology and chemistry*. 2013;32(3):673-83.
- Wang S, Tian D, Zheng W, Jiang S, Wang X, Andersen ME, et al. Combined exposure to 3-chloro-4-dichloromethyl-5-hydroxy-2(5H)-furanone and microcystin-LR increases genotoxicity in Chinese hamster ovary cells through oxidative stress. *Environmental science & technology*. 2013;47(3):1678-87.
- Wang W, Lampi MA, Huang X-D, Gerhardt K, Dixon DG, Greenberg BM. Assessment of mixture toxicity of copper, cadmium, and phenanthrenequinone to the marine bacterium *Vibrio fischeri*. *Environmental toxicology*. 2009;24(2):166-77.
- Wang X-F, Zhou Q-X. Joint toxicity of methamidophos and cadmium acting on *Abelmoschus manihot*. *Journal of environmental sciences (China)*. 2005;17(3):379-83.
- Wang Y, Yuan L, Yao C, Ding L, Li C, Fang J, et al. A combined toxicity study of zinc oxide nanoparticles and vitamin C in food additives. *Nanoscale*. 2014;6(24):15333-42.
- Wang Z, Chen J, Huang L, Wang Y, Cai X, Qiao X, et al. Integrated fuzzy concentration addition-independent action (IFCA-IA) model outperforms two-stage prediction (TSP) for predicting mixture toxicity. *Chemosphere*. 2009;74(5):735-40.
- Wangikar PB, Dwivedi P, Sinha N, Sharma AK, Telang AG. Teratogenic effects in rabbits of simultaneous exposure to ochratoxin A and aflatoxin B1 with special reference to microscopic effects. *Toxicology*. 2005;215(1-2):37-47.
- Warne MS, Hawker DW. The number of components in a mixture determines whether synergistic and antagonistic or additive toxicity predominate: the funnel hypothesis. *Ecotoxicology and environmental safety*. 1995;31(1):23-8.
- Wassenberg DM, Swails EE, Di Giulio RT. Effects of single and combined exposures to benzo(a)pyrene and 3,3',4,4'-pentachlorobiphenyl on EROD activity and development in *Fundulus heteroclitus*. *Marine environmental research*. 2002;54(3-5):279-83.
- Watanabe MX, Jones SP, Iwata H, Kim E-Y, Kennedy SW. Effects of co-exposure to 2,3,7,8-tetrachlorodibenzo-p-dioxin and perfluorooctane sulfonate or perfluorooctanoic acid on expression of cytochrome P450 isoforms in chicken (*Gallus gallus*) embryo hepatocyte cultures. *Comparative biochemistry and physiology Toxicology & pharmacology : CBP*. 2009;149(4):605-12.
- Weeks CE, Rao TK, Young JA, Slaga TJ, Epler JL. Effect of weak-, non-, and co-carcinogenic chemicals on 2-acetylaminofluorene-induced mutation in *Salmonella typhimurium*. *Toxicology*. 1979;14(3):255-62.
- Wei L, Shao W-W, Ding G-H, Fan X-L, Yu M-L, Lin Z-H. Acute and joint toxicity of three agrochemicals to Chinese tiger frog (*Hoplobatrachus chinensis*) tadpoles. *Dong wu xue yan jiu = Zoological research*. 2014;35(4):272-9.
- Wei Q, Zhan L, Juanjuan B, Jing W, Jianjun W, Taoli S, et al. Biodistribution of co-exposure to multi-walled carbon nanotubes and nanodiamonds in mice. *Nanoscale research letters*. 2012;7(1):473.
- Welder AA, O'Dell JF, Melchert RB, Eselin JA. Evaluation of the combined toxic effects of cocaine and ethanol on primary myocardial cell cultures. *Toxicology in vitro : an international journal published in association with BIBRA*. 1991;5(3):247-55.
- Weltje L. Mixture toxicity and tissue interactions of Cd, Cu, Pb and Zn in earthworms (*Oligochaeta*) in laboratory and field soils: a critical evaluation of data. *Chemosphere*. 1998;36(12):2643-60.
- Wetmore BA, Struve MF, Gao P, Sharma S, Allison N, Roberts KC, et al. Genotoxicity of intermittent co-exposure to benzene and toluene in male CD-1 mice. *Chemico-biological interactions*. 2008;173(3):166-78.

Weyns M, Koppen C, Tassignon M-J. Scleral contact lenses as an alternative to tarsorrhaphy for the long-term management of combined exposure and neurotrophic keratopathy. *Cornea*. 2013;32(3):359-61.

Whitby KE, Collins TF, Welsh JJ, Black TN, Flynn T, Shackelford M, et al. Developmental effects of combined exposure to ethanol and vitamin A. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1994;32(4):305-20.

Wigaeus E, Lof A, Nordqvist MB. Uptake, distribution, metabolism, and elimination of styrene in man. A comparison between single exposure and co-exposure with acetone. *British journal of industrial medicine*. 1984;41(4):539-46.

Wigal T, Amsel A. Behavioral and neuroanatomical effects of prenatal, postnatal, or combined exposure to ethanol in weanling rats. *Behavioral neuroscience*. 1990;104(1):116-26.

Wildman JM, Freedman ML, Rosman J, Goldstein B. Benzene and lead inhibition of rabbit reticulocyte heme and protein synthesis: evidence for additive toxicity of these two components of commercial gasoline. *Research communications in chemical pathology and pharmacology*. 1976;13(3):473-88.

Wilpart M, Mainguet P, Maskens A, Roberfroid M. Mutagenicity of 1,2-dimethylhydrazine towards *Salmonella typhimurium*, co-mutagenic effect of secondary biliary acids. *Carcinogenesis*. 1983;4(1):45-8.

Windemuller FJ, Ettema JH. Effects of combined exposure to trichloroethylene and alcohol on mental capacity. *International archives of occupational and environmental health*. 1978;41(2):77-85.

Wisniewska-Knypl JM, Wronska-Nofer T, Jajte J, Jedlinska U. The effect of combined exposures to ethanol and xylene on rat hepatic microsomal monooxygenase activities. *Alcohol (Fayetteville, NY)*. 1989;6(5):347-52.

Wisniewska-Knypl JM, Wronska-Nofer T. Induction of cytochrome P-450 monooxygenase after combined exposure of rats to xylene and ethanol. *Folia medica Cracoviensia*. 1990;31(3):185-92.

Wolt JD. A mixture toxicity approach for environmental risk assessment of multiple insect resistance genes. *Environmental toxicology and chemistry*. 2011;30(3):763-72.

Woo HD, Kim BM, Kim YJ, Lee YJ, Kang SJ, Cho YH, et al. Quercetin prevents necrotic cell death induced by co-exposure to benzo(a)pyrene and UVA radiation. *Toxicology in vitro : an international journal published in association with BIBRA*. 2008;22(8):1840-5.

Wraith D, Mengersen K. Assessing the combined effect of asbestos exposure and smoking on lung cancer: a Bayesian approach. *Statistics in medicine*. 2007;26(5):1150-69.

Wronska-Nofer T, Klimczak J, Wisniewska-Knypl JM, Jajte J, Opalska B. Combined effect of ethanol and carbon disulphide on cytochrome P-450 mono-oxygenase, lipid peroxidation and ultrastructure of the liver in chronically exposed rats. *Journal of applied toxicology : JAT*. 1986;6(4):297-302.

Wu B, Liu Z, Xu Y, Li D, Li M. Combined toxicity of cadmium and lead on the earthworm *Eisenia fetida* (Annelida, Oligochaeta). *Ecotoxicology and environmental safety*. 2012;81:122-6.

Wu F, Fu Z, Liu B, Mo C, Chen B, Corns W, et al. Health risk associated with dietary co-exposure to high levels of antimony and arsenic in the world's largest antimony mine area. *The Science of the total environment*. 2011;409(18):3344-51.

Wyatt TA, Sisson JH, Allen-Gipson DS, McCaskill ML, Boten JA, DeVasure JM, et al. Co-exposure to cigarette smoke and alcohol decreases airway epithelial cell cilia beating in a protein kinase Cepsilon-dependent manner. *The American journal of pathology*. 2012;181(2):431-40.

Xing L, Sun J, Liu H, Yu H. Combined toxicity of three chlorophenols 2,4-dichlorophenol, 2,4,6-trichlorophenol and pentachlorophenol to *Daphnia magna*. *Journal of environmental monitoring : JEM*. 2012;14(6):1677-83.

Xiong X, Allinson G, Stagnitti F, Murray F, Wang X, Liang R, et al. Effects of simultaneous exposure to atmospheric sulfur dioxide and heavy metals on the yield and metal content of soybean grain (*Glycine max* L. Merr.). *Bulletin of environmental contamination and toxicology*. 2003;71(5):1005-10.

Xu H-y, Chen R-r, Cai X-y, He D-f. Effects of co-exposure to paraquat and maneb on system of substantial nigra and striatum in rats. *Zhonghua lao dong wei sheng zhi ye bing za zhi = Zhonghua laodong weisheng zhiyebing zazhi = Chinese journal of industrial hygiene and occupational diseases*. 2011;29(1):33-8.

Xu N, Chen P, Liu L, Zeng Y, Zhou H, Li S. Effects of combined exposure to 17alpha-ethynylestradiol and dibutyl phthalate on the growth and reproduction of adult male zebrafish (*Danio rerio*). *Ecotoxicology and environmental safety*. 2014;107:61-70.

Xu X, Rao X, Wang T-Y, Jiang SY, Ying Z, Liu C, et al. Effect of co-exposure to nickel and particulate matter on insulin resistance and mitochondrial dysfunction in a mouse model. *Particle and fibre toxicology*. 2012;9:40.

Yamakawa M, Niibe H, Honjo J, Kazumoto T, Akimoto T, Furuta M, et al. Experimental studies on the combined effect of radiation and UFT 1. Radiosensitizing effect of UFT under single X-ray exposure. *Gan to kagaku ryoho Cancer & chemotherapy*. 1989;16(10):3443-7.

Yan J, Lin B, Hu C, Zhang H, Lin Z, Xi Z. The combined toxicological effects of titanium dioxide nanoparticles and bisphenol A on zebrafish embryos. *Nanoscale research letters*. 2014;9(1):406.

Yancey CB, Hegarty BC, Qurollo BA, Levy MG, Birkenheuer AJ, Weber DJ, et al. Regional seroreactivity and vector-borne disease co-exposures in dogs in the United States from 2004-2010: utility of canine surveillance. *Vector borne and zoonotic diseases (Larchmont, NY)*. 2014;14(10):724-32.

Yang JS, Kim EA, Lee MY, Park IJ, Kang SK. Biological monitoring of occupational exposure to N,N-dimethylformamide--the effects of co-exposure to toluene or dermal exposure. *International archives of occupational and environmental health*. 2000;73(7):463-70.

Yang RS. Some current approaches for studying combination toxicology in chemical mixtures. *Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association*. 1996;34(11-12):1037-44.

Yang Y, Ma H, Zhou J, Liu J, Liu W. Joint toxicity of permethrin and cypermethrin at sublethal concentrations to the embryo-larval zebrafish. *Chemosphere*. 2014;96:146-54.

Yeager RL, Franzosa JA, Millsap DS, Lim J, Hansen CM, Jasevicius AV, et al. Brief report: embryonic growth and hatching implications of developmental 670-nm phototherapy and dioxin co-exposure. *Photomedicine and laser surgery*. 2006;24(3):410-3.

Yeager RL, Franzosa JA, Millsap DS, Lim J, Heise SS, Wakhungu P, et al. Survivorship and mortality implications of developmental 670-nm phototherapy: dioxin co-exposure. *Photomedicine and laser surgery*. 2006;24(1):29-32.

Yee SB, Hanumegowda UM, Copple BL, Shibuya M, Ganey PE, Roth RA. Endothelial cell injury and coagulation system activation during synergistic hepatotoxicity from monocrotaline and bacterial lipopolysaccharide coexposure. *Toxicological sciences : an official journal of the Society of Toxicology*. 2003;74(1):203-14.

Yee SB, Kinser S, Hill DA, Barton CC, Hotchkiss JA, Harkema JR, et al. Synergistic hepatotoxicity from coexposure to bacterial endotoxin and the pyrrolizidine alkaloid monocrotaline. *Toxicology and applied pharmacology*. 2000;166(3):173-85.

Yokoro K, Niwa O, Hamada K, Kamiya K, Seyama T, Inoh A. Carcinogenic and co-carcinogenic effects of radiation in rat mammary carcinogenesis and mouse T-cell lymphomagenesis: a review. *International journal of radiation biology and related studies in physics, chemistry, and medicine*. 1987;51(6):1069-80.

- Young JTF, Gauley J, Heikkila JJ. Simultaneous exposure of *Xenopus* A6 kidney epithelial cells to concurrent mild sodium arsenite and heat stress results in enhanced hsp30 and hsp70 gene expression and the acquisition of thermotolerance. *Comparative biochemistry and physiology Part A, Molecular & integrative physiology*. 2009;153(4):417-24.
- Yu KN, Guan ZJ, Young EC, Stokes MJ. Measurement of tracheobronchial dose from simultaneous exposure to environmental radon and thoron progeny. *Health physics*. 1998;75(2):153-8.
- Yuan G, Dai S, Yin Z, Lu H, Shu Y, Wang C. Combined effects of sub-chronic exposure to lead and cadmium on physiological and biochemical indexes of blood in SD rats. *Wei sheng yan jiu = Journal of hygiene research*. 2014;43(2):259-64.
- Yuan X, Lu G, Zhao J. QSAR study on the joint toxicity of 2,4-dinitrotoluene with aromatic compounds to *Vibrio fischeri*. *Journal of environmental science and health Part A, Toxic/hazardous substances & environmental engineering*. 2002;37(4):573-8.
- Yucesoy B, Yucel A, Erdem O, Burgaz S, Imir T, Karakaya AE, et al. Effects of occupational chronic co-exposure to n-hexane, toluen, and methyl ethyl ketone on NK cell activity and some immunoregulatory cytokine levels in shoe workers. *Human & experimental toxicology*. 1999;18(9):541-6.
- Yuede CM, Olney JW, Creeley CE. Developmental neurotoxicity of alcohol and anesthetic drugs is augmented by co-exposure to caffeine. *Brain sciences*. 2013;3(3):1128-52.
- Zago A, Leao RM, Carneiro-de-Oliveira PE, Marin MT, Cruz FC, Planeta CS. Effects of simultaneous exposure to stress and nicotine on nicotine-induced locomotor activation in adolescent and adult rats. *Brazilian journal of medical and biological research = Revista brasileira de pesquisas medicas e biologicas*. 2012;45(1):33-7.
- Zaichkina SI, Aptikaeva GF, Akhmadieva AK, Rozanova OM, Smirnova EN, Ganassi EE. Induction of cytogenetic damage in Chinese hamster cells after combined exposure to low doses of gamma-radiation and various chemical and physical agents. *Genetika*. 1996;32(12):1721-4.
- Zeller WJ, Berger MR, Henne T, Weber E. More than additive toxicity of the combination of 1-methyl-1-nitrosourea plus 1,3-bis(2-chloroethyl)-1-nitrosourea in the rat. *Cancer research*. 1986;46(4 Pt 1):1714-6.
- Zeng H-H, Lei C-W, Zhang Y-H, Cao Y, Liu Z-T. Prediction of the joint toxicity of five organophosphorus pesticides to *Daphnia magna*. *Ecotoxicology (London, England)*. 2014;23(10):1870-7.
- Zeng M, Lin Z, Yin D, Yin K. QSAR for predicting joint toxicity of halogenated benzenes to *Dicrateria zhanjiangensis*. *Bulletin of environmental contamination and toxicology*. 2008;81(6):525-30.
- Zeni O, Di Pietro R, d'Ambrosio G, Massa R, Capri M, Naarala J, et al. Formation of reactive oxygen species in L929 cells after exposure to 900 MHz RF radiation with and without co-exposure to 3-chloro-4-(dichloromethyl)-5-hydroxy-2(5H)-furanone. *Radiation research*. 2007;167(3):306-11.
- Zhang L, Zhou P-J, Yang F, Wang Z-D. Computer-based QSARs for predicting mixture toxicity of benzene and its derivatives. *Chemosphere*. 2007;67(2):396-401.
- Zhang L-f, Liu L-s, Chu X-m, Xie H, Cao L-j, Guo C, et al. Combined effects of a high-fat diet and chronic valproic acid treatment on hepatic steatosis and hepatotoxicity in rats. *Acta pharmacologica Sinica*. 2014;35(3):363-72.
- Zhang T, Li X, Lu Y, Liu P, Zhang C, Luo H. Joint toxicity of heavy metals and chlorobenzenes to pyriformis *Tetrahymena*. *Chemosphere*. 2014;104:177-83.
- Zhang X. Simultaneous exposure to dietary acrylamide and corn oil developed carcinogenesis through cell proliferation and inhibition of apoptosis by regulating p53-mediated mitochondria-dependent signaling pathway. *Toxicology and industrial health*. 2009;25(2):101-9.

Zhang Y-H, Liu S-S, Liu H-L, Liu Z-Z. Evaluation of the combined toxicity of 15 pesticides by uniform design. *Pest management science*. 2010;66(8):879-87.

Zhang Y-H, Liu S-S, Song X-Q, Ge H-L. Prediction for the mixture toxicity of six organophosphorus pesticides to the luminescent bacterium Q67. *Ecotoxicology and environmental safety*. 2008;71(3):880-8.

Zhao X, Toyooka T, Ibuki Y. Synergistic bactericidal effect by combined exposure to Ag nanoparticles and UVA. *The Science of the total environment*. 2013;458-460:54-62.

Zhidkov VV, Borshchenko VV, Manovtsev GA. Effect of combined exposure to dry air warming and cooling water procedures on orthostatic stability in humans. *Kosmicheskaiia biologiiia i aviakosmicheskaiia meditsina*. 1978;12(4):85-7.

Zhorova ES, Kalistratova VS, Nisimov PG, Parfenova IM, Tishchenko GS. Complex application of indralin and ferrocin for the combined exposure on the organism of external gamma-irradiation and incorporation of ¹³⁷Cs. *Radiatsionnaia biologiiia, radioecologiiia*. 2010;50(2):171-9.

Zhou S, Duan C, Michelle WHG, Yang F, Wang X. Individual and combined toxic effects of cypermethrin and chlorpyrifos on earthworm. *Journal of environmental sciences (China)*. 2011;23(4):676-80.

Zhu B, Wang Q, Wang X, Zhou B. Impact of co-exposure with lead and decabromodiphenyl ether (BDE-209) on thyroid function in zebrafish larvae. *Aquatic toxicology (Amsterdam, Netherlands)*. 2014;157:186-95.

Zhu J, Yu L, Wu L, Hu L, Shi H. Unexpected phenotypes of malformations induced in *Xenopus tropicalis* embryos by combined exposure to triphenyltin and 9-cis-retinoic acid. *Journal of environmental sciences (China)*. 2014;26(3):643-9.

Zimmer KE, Kraugerud M, Aleksandersen M, Gutleb AC, Ostby GC, Dahl E, et al. Fetal adrenal development: comparing effects of combined exposures to PCB 118 and PCB 153 in a sheep model. *Environmental toxicology*. 2013;28(3):164-77.

Zou X, Lin Z, Deng Z, Yin D, Zhang Y. The joint effects of sulfonamides and their potentiator on *Photobacterium phosphoreum*: differences between the acute and chronic mixture toxicity mechanisms. *Chemosphere*. 2012;86(1):30-5.

Zou X, Zhou X, Lin Z, Deng Z, Yin D. A docking-based receptor library of antibiotics and its novel application in predicting chronic mixture toxicity for environmental risk assessment. *Environmental monitoring and assessment*. 2013;185(6):4513-27.

Zou X-Y, Xu B, Yu C-P, Zhang H-W. Combined toxicity of ferroferric oxide nanoparticles and arsenic to the ciliated protozoa *Tetrahymena pyriformis*. *Aquatic toxicology (Amsterdam, Netherlands)*. 2013;134-135:66-73.

Zouboulis CC, Seltmann H, Sass JO, Ruhl R, Plum C, Hettmannsperger U, et al. Retinoid signaling by all-trans retinoic acid and all-trans retinoyl-beta-D-glucuronide is attenuated by simultaneous exposure of human keratinocytes to retinol. *The Journal of investigative dermatology*. 1999;112(2):157-64.

Zuskin E, Valic F. Respiratory response in simultaneous exposure to flax and hemp dust. *British journal of industrial medicine*. 1973;30(4):375-80.

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