Bulletin de veille du Réseau des Ecotoxicologues de l'INRA

ECOTOX

N°5, octobre 2013

Réalisé par l'équipe de veille sur la période du 1er juin au 31 octobre 2013, sauf pour les publications des membres du réseau qui sont collectées depuis début septembre 2013.
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Edito

Voici notre 5ème bulletin de veille, comprenant de nouvelles rubriques. Nous vous proposons ainsi des repères en écotoxicologie, synthétisant des actualités et informations intéressantes, une rubrique « en bref », qui propose dans ce bulletin des informations sur les nanos…

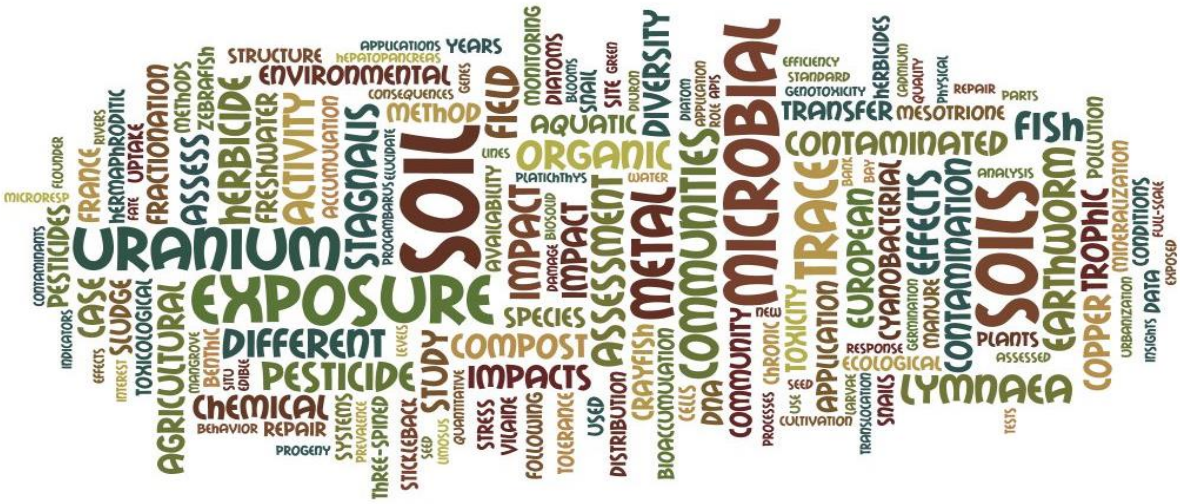
A noter également beaucoup de documents de référence, comme par exemple l'expertise collective de l'INSERM portant sur l'effet des pesticides sur la santé humaine, des tests OCDE actualisés… Nous avons réduit la taille des résumés des publications, mais vous pouvez retrouver les résumés intégraux par les liens proposés.

N'hésitez pas à nous faire part de vos remarques et suggestions sur la forme et le contenu de ce bulletin, sur des propositions de thèmes à mettre en veille, ou sur votre souhait de prendre en charge la veille sur une thématique précise. Contact : christian.mougin@versailles.inra.fr.

Bonne lecture !

L'équipe de veille

NB : les références de plus de 120 articles des membres du réseau ont été collectées par la plateforme depuis le lancement de la veille. Le nuage ci-dessous vous en décrit les principaux mots-clés. Nous vous proposerons prochainement une analyse plus fine de nos productions.



Sommaire

Repères en écotoxicologie

Amphibians Living Close to Farm Fields Are More Resistant to Common Insecticides

Information parue sur le site de l'Université de Pittsburg le 1er mai 2013.

Amphibian populations living close to agricultural fields have become more resistant to a common insecticide and are actually resistant to multiple common insecticides, according to two recent studies conducted at the University of Pittsburgh.

In a study published today in Evolutionary Applications, the Pitt researchers demonstrate, for the first time, that tadpoles from populations close to farm fields are more resistant to chlorpyrifos (one of the most commonly applied insecticides in the world), often sold as "Dursban" or "Lorsban". In addition, a related study published in February shows that tadpoles resistant to chlorpyrifos are also resistant to other insecticides...

The article published today in Evolutionary Applications is titled "Proximity to agriculture is correlated with pesticide tolerance: Evidence for the evolution of amphibian resistance to modern pesticides."

Accès au document

Even 'environmentally protective' levels of pesticide devastate insect biodiversity

Le site http://theconversation.com, financé par plusieurs universités commente l'article "Pesticides reduce regional biodiversity of stream invertebrates" paru le 17 juin online sur PNAS. Cet article remet en cause les tests d'écotoxicologie.

Pesticide levels considered environmentally friendly in Europe and Australia are, in fact, having a devastating effect on invertebrate insect biodiversity in nearby creeks and streams, a new study has found, showing the need for an urgent overhaul of the way pesticide risk is assessed.

Water-dwelling invertebrates like worms, snails, crustaceans, mites and insects play a crucial role in regional ecosystems because they provide food for fish, birds and platypuses.

The study, published in Proceedings of the National Academy of Sciences (PNAS), found that invertebrate biodiversity, mostly insects, was slashed by up to 42% in the streams studied.

"Current use pesticides in southern Victoria and regions in Germany and France is reducing the number of different types of animals without backbones, or invertebrates, living in streams and rivers. The animals most affected were mayflies, stoneflies, caddisflies and dragon flies," said ecotoxicologist and aquatic ecologist from the University of Technoligy, Sydney, Dr Ben Kefford, who co-authored the paper. "Importantly, the reduction in the number of different types of invertebrates occurred at the regional scale."

Pesticide regulation. The findings also show that pesticide regulation in Australia and Europe may be flawed. Pesticide regulation is intended to prevent threats to biodiversity or collateral elimination of insects that are not pests.

"The regulation in both these continents is probably failing because they are both based on determining the effect of pesticides in the laboratory […] without studying the effects pesticides have in real streams and rivers," Dr Kefford said.

However, Dr Kefford, who co-authored the paper, said that while pesticides were often regulated at a national level, the risk is mostly assessed by its effect on individual organisms rather than on real ecosystems.

"What is undeniable is the need for regulation to consider the effects of pesticides in real ecosystems and not be confined to effects in the laboratory and semi-natural ecosystems."

Accès au document

L'article mentionné est le suivant :

Pesticides reduce regional biodiversity of stream invertebrates

Mikhail A. Beketov,Ben J. Kefford,Ralf B. Schäfer, and Matthias Liess

Abstract: The biodiversity crisis is one of the greatest challenges facing humanity, but our understanding of the drivers remains limited. Thus, after decades of studies and regulation efforts, it remains unknown whether to what degree and at what concentrations modern agricultural pesticides cause regional-scale species losses. We analyzed the effects of pesticides on the regional taxa richness of stream invertebrates in Europe (Germany and France) and Australia (southern Victoria)…

Accès au document

Evaluation du risque

ECETOC 2012 Annual Report

ECETOC: European center for ecotoxicology and toxicology of chemicals. Ce rapport annuel donne un aperçu de l'activité scientifique de ce centre commun aux principaux industriels de la chimie.

ECO 8.3: Fish cell line & embryo assays

ECO 9: Investigating the environmental relevance of laboratory bioconcentration test

ECO 11: Influence of microbial biomass and diversity on biotransformation

ECO 13: Applying and verifying PBT/POP models through comprehensive screening of chemicals

ECO 17: Evaluation of test methods for measuring toxicity to sediment organisms

ECO 18: Identifying limitations of the OCED water-sediment test (OECD 308) and developing suitable alternatives to assess persistence

ECO 19: Towards more ecologically realistic assessment of chemicals in the environment

ECO 21: Mechanistic Bioaccumulation Model(s) for Ionogenic Organic Substances in Fish

Le rapport est consultable en ligne : http://bit.ly/ecetoc-2012ar

Méthodes et pesticides

An integrated approach to model the biomagnification of organic pollutants in aquatic food webs of the Yangtze Three Gorges Reservoir ecosystem using adapted pollution scenarios

Scholz-Starke, B; Ottermanns, R; Rings, U; Floehr, T; Hollert, H; Hou, JL; Li, B; Wu, LL; Yuan, XZ; Strauch, K; Wei, H; Norra, S; Holbach, A; Westrich, B; Schaffer, A; Ross-Nickoll, M.

ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, 20 (10):7009-7026 (2013) 10.1007/s11356-013-1504-5

Abstract: The impounding of the Three Gorges Reservoir (TGR) at the Yangtze River caused large flooding of urban, industrial, and agricultural areas, and profound land use changes took place. Consequently, substantial amounts of organic and inorganic pollutants were released into the reservoir. Additionally, contaminants and nutrients are entering the reservoir by drift, drainage, and runoff from adjacent agricultural areas as well as from sewage of industry, aquacultures, and households. The main aim of the presented research project is a deeper understanding of the processes that determines the bioaccumulation and biomagnification of organic pollutants, i.e., mainly pesticides, in aquatic food webs under the newly developing conditions of the TGR. (…)

No proof of synergy at environmentally realistic concentrations of prochloraz and esfenvalerate. A reaction on "synergy in microcosms with environmentally realistic concentrations of prochloraz and esfenvalerate" by Bjergager *et al.* (Aquat. Toxicol. 101 (2011), 412-422)

Weltje, L

AQUATIC TOXICOLOGY, 140 466-468 (2013) 10.1016/j.aquatox.2013.05.003

Abstract: The aquatic microcosm study by Bjergager et al. (2011) on a mixture of the fungicide prochloraz and the insecticide esfenvalerate concluded that synergistic effects were found at environmentally realistic concentrations for these compounds and thus that current risk assessment procedures might underestimate the effects of synergistically interacting azoles and pyrethroids. Both prochloraz and esfenvalerate are registered in Europe and thus the relevance of the employed concentrations can be assessed against European surface water

measurements and risk assessments procedures. A detailed comparison of the employed concentration of prochloraz in the microcosm study with the concentration deemed acceptable in the European Union and those actually measured in the aquatic environment demonstrate that the employed prochloraz concentration was about two orders of magnitude too high. Therefore, on basis of the data presented by Bjergager et al. (2011) it cannot be concluded that current European single substance risk assessment procedures are insufficiently protective and that synergism actually occurs at environmentally relevant concentrations.

Utilizing toxicogenomic data to understand chemical mechanism of action in risk assessment

Wilson, VS; Keshava, N; Hester, S; Segal, D; Chiu, WH; Thompson, CM; Euling, SY

TOXICOLOGY AND APPLIED PHARMACOLOGY, 271 (3):299-308 (2013) 10.1016/j.taap.2011.01.017

Abstract: The predominant role of toxicogenomic data in risk assessment, thus far, has been one of augmentation of more traditional in vitro and in vivo toxicology data. This article focuses on the current available examples of instances where toxicogenomic data has been evaluated in human health risk assessment (e.g., acetochlor and arsenicals) which have been limited to the application of toxicogenomic data to inform mechanism of action. This article reviews the regulatory policy backdrop and highlights important efforts to ultimately achieve regulatory acceptance. (…)

The new Biocidal Products Regulation

Elsmore, R

CHIMICA OGGI-CHEMISTRY TODAY, 31 (3):12-15 (2013)

Abstract: The new Biocidal Products Regulation (BPR) will repeal and replace the Biocidal Products Directive (BPD) and is intended to build on the principles laid down in the BPD while introducing a number of significant changes to the way biocides are regulated within the EU. (…)

Critical issues in using the common mixture toxicity models concentration addition or response addition on species sensitivity distributions: A theoretical approach

Gregorio, V; Chevre, N; Junghans, M

ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY, 32 (10): 2387-2395 (2013), 10.1002/etc.2320

Abstract: The risk of chemical mixtures to ecosystems is often assessed by applying the model of concentration addition or response addition combined with species sensitivity distribution (SSD) curves. Mixture effect predictions have been shown to be consistent only when these models are applied for a single species, however, and not with several species simultaneously aggregated to SSDs. The more stringent procedure for mixture risk assessment would hence be to apply first the concentration addition or response addition models to each species separately and, in a second step, to combine the results to construct an SSD for a mixture. (…)

Standard methods for toxicology research in *Apis mellifera*

Medrzycki, P; Giffard, H; Aupinel, P; Belzunces, LP; Chauzat, MP; Classen, C; Colin, ME; Dupont, T; Girolami, V; Johnson, R; Le Conte, Y; Luckmann, J; Marzaro, M; Pistorius, J; Porrini, C; Schur, A; Sgolastra, F; Delso, NS; van der Steen, JJM; Wallner, K; Alaux, C; Biron, DG; Blot, N; Bogo, G; Brunet, JL; Delbac, F; Diogon, M; El Alaoui, H; Provost, B; Tosi, S; Vidau, C

JOURNAL OF APICULTURAL RESEARCH, 52 (4) UNSP 52.4.14 (2013) 10.3896/IBRA.1.52.4.14

Abstract: Modern agriculture often involves the use of pesticides to protect crops. These substances are harmful to target organisms (pests and pathogens). Nevertheless, they can also damage non-target animals, such as pollinators and entomophagous arthropods. (…)

Reliable predictive computational toxicology methods for mixture toxicity: toward the development of innovative integrated models for environmental risk assessment

Kim, J; Kim, S; Schaumann, GE

REVIEWS IN ENVIRONMENTAL SCIENCE AND BIO-TECHNOLOGY, 12 (3):235-256 (2013), 10.1007/s11157-012-9286-7

Abstract: A main objective in the field of mixture toxicity is to determine how well combined effects are predictable based on the known effects of mixture constituents. (…)

A framework for fit-for-purpose dose response assessment

Meek, MEB; Bolger, M; Bus, JS; Christopher, J; Conolly, RB; Lewis, RJ; Paolini, GM; Schoeny, R; Haber, LT; Rosenstein, AB; Dourson, ML

REGULATORY TOXICOLOGY AND PHARMACOLOGY, 66 (2):234-240 (2013) 10.1016/j.yrtph.2013.03.012

Abstract: The NRC report Science and Decisions: Advancing **Risk Assessment** made several recommendations to improve chemical **risk assessment**, with a focus on in-depth chronic dose-response assessments conducted by the U.S. Environmental Protection Agency. The recommendations addressed two broad elements: improving technical analysis and utility for decision making. (…) A key **product** was a framework (http://www.allianceforrisk.org/Workshop/Framework/ProblemFormulation.html) to guide risk assessors and managers to various dose-response **assessment methods** relevant to a range of decision contexts ranging from priority setting to full **assessment**, as illustrated by case studies. (…).

An integrated approach for prospectively investigating a mode-of-action for rodent liver effects

LeBaron, MJ; Geter, DR; Rasoulpour, RJ; Gollapudi, BB; Thomas, J; Murray, J; Kan, HL; Wood, AJ; Elcombe, C; Vardy, A; McEwan, J; Terry, C; Billington, R

TOXICOLOGY AND APPLIED PHARMACOLOGY, 270 (2):164-173 (2013) 10.1016/j.taap.2013.04.009

Abstract: Registration of new plant protection products (e.g., herbicide, insecticide, or fungicide) requires comprehensive mammalian toxicity evaluation including carcinogenicity studies in two species. The outcome of the carcinogenicity testing has a significant bearing on the overall human health risk assessment of the substance and, consequently, approved uses for different crops across geographies. In order to understand the relevance of a specific tumor finding to human health, a systematic, transparent, and hypothesis-driven mode of action (MoA) investigation is, appropriately, an expectation by the regulatory agencies. Here, we describe a novel approach of prospectively generating the MoA data by implementing additional end points to the standard guideline toxicity studies with sulfoxaflor, a molecule in development. (…).

European scenarios for exposure of soil organisms to pesticides

Tiktak, A; Boesten, JJTI; Egsmose, M; Gardi, C; Klein, M; Vanderborght, J

JOURNAL OF ENVIRONMENTAL SCIENCE AND HEALTH PART B-PESTICIDES FOOD CONTAMINANTS AND AGRICULTURAL WASTES, 48 (9):703-716 (2013)

Abstract: Standardised exposure scenarios play an important role in European **pesticide** authorisation procedures (a scenario is a combination of climate, weather and crop data to be used in exposure models). The European Food Safety Authority developed such scenarios for the assessment of exposure of soil organisms to **pesticides**. (…) A statistical approach was adopted to find scenarios that are consistent with this exposure goal. Scenario development began with the simulation of the concentration distribution in the entire area of use by means of a simple analytical model.

Advancements in Endangered Species Act Affects Determination for Pesticide Registration Actions

Odenkirchen, EW

PESTICIDE REGULATION AND THE ENDANGERED SPECIES ACT, 1111 213-223 (2012)

Proceedings Paper: Symposium on the Endangered Species Act and Pesticide Regulation: Scientific and Process Improvements / 242nd Meeting of the American-Chemical-Society **Conference Date:** AUG 30-SEP 01, 2011 **Conference Location:** Denver, CO

Abstract: The United States Environmental Protection Agency is beginning the review of **pesticide** registrations under the **Registration** Review provisions of the Food Quality Protection Act. This process will include the completion of effects determinations and consultation for federally listed threatened and endangered species under Section 7 of the Endangered Species Act. The spatial, biological and temporal complexity of effects determinations

and consultation for **pesticide regulatory** decisions, often made at a nationwide geographic scale, necessitates the movement toward a process that automates and **standardizes** many aspects of **pesticide risk assessment**. This development raises important scientific issues between the EPA and the U.S. Fish and Wildlife and National Marine Fisheries Services.

Pesticide Regulation and Endangered Species: Moving from Stalemate to Solutions

Racke, KD; McGaughey, BD

Editor(s): Racke KD; McGaughey BD; Cowles JL; Hall AT; Jackson SH; Jenkins JJ; Johnston JJ

PESTICIDE REGULATION AND THE ENDANGERED SPECIES ACT, 1111 3-27 (2012)

Proceedings Paper: Symposium on the Endangered Species Act and Pesticide Regulation: Scientific and Process Improvements / 242nd Meeting of the American-Chemical-Society **Conference Date:** AUG 30-SEP 01, 2011 **Conference Location:** Denver, CO

Abstract: Shortly after the U.S. Environmental Protection Agency (EPA) assumed responsibilities for federal **pesticide regulation** under FIFRA (Federal **Insecticide**, **Fungicide** and Rodenticide Act), the Endangered Species Act (ESA) became law. (…) This chapter reviews historical developments related to implementation of ESA obligations for **pesticide regulation**, examines the current state of affairs with respect to **Registration** Review and litigation, and highlights a movement toward process and science improvements described in succeeding chapters of this book.

Data Quality, Reliability, and Relevance Standards for Ecological Risk Assessment: Recommendations for Improvements to Pesticide Regulation in Compliance with the Endangered Species Act

Hall, AT; McGaughey, BD; Gagne, JA

Editor(s): Racke KD; McGaughey BD; Cowles JL; Hall AT; Jackson SH; Jenkins JJ; Johnston JJ

PESTICIDE REGULATION AND THE ENDANGERED SPECIES ACT, 1111 225-242 (2012)

Proceedings Paper: Symposium on the Endangered Species Act and Pesticide Regulation: Scientific and Process Improvements / 242nd Meeting of the American-Chemical-Society **Conference Date:** AUG 30-SEP 01, 2011 **Conference Location:** Denver, CO

Abstract: Risk assessment procedures used by the U.S. Environmental Protection Agency (EPA) for **pesticides** have been worked out over a period of years and are now well-established and well-known by the **regulated** community. (…) This paper concludes that no instructional guidelines for evaluating relevancy and reliability are in place, and shows that peer review does not always serve that purpose. Consequently, the risk assessor must use due diligence to consider **risk assessment** and protection goals in light of data reliability and relevance. Suggestions provided here on how a risk assessor might weigh data for use in a given **risk assessment** hopefully enhance the assessor's ability to utilize or question data and give it the pro! per role in the given **risk assessment** exercise.

Faune et pesticides

Retrospective estimation of population-level effect of pollutants based on local adaptation and fitness cost of tolerance

Tanaka, Y; Tatsuta, H

ECOTOXICOLOGY, 22 (5):795-802 (2013) SI 10.1007/s10646-013-1081-x

Abstract: We present a novel framework for estimating site-specific effects of pollutants on natural populations. Our method is based on fitness optimization and uses observed differences in tolerance (sensitivity) to a particular pollutant between populations at contaminated and uncontaminated sites (i.e., target and reference populations). (…) The estimated exposure level at the contaminated site was about 0.015 mu g/L, and the population-level risk corresponded to about a 24 % reduction of the intrinsic rate of natural increase.

Dietary chlorantraniliprole suppresses reproduction in worker bumblebees

Smagghe, G; Deknopper, J; Meeus, I; Mommaerts, V

PEST MANAGEMENT SCIENCE, 69 (7):787-791 (2013) 10.1002/ps.3504

Abstract: Pollinators such as the bumblebee, Bombus terrestris, fulfil a crucial role in agriculture. In this context, tests were conducted with the **insecticide** chlorantraniliprole (…) The present study identified an important physiological endpoint of sublethal effects on reproduction, as this is associated with lethargic behaviour after oral intake. As such, this is a factor that should now be incorporated into future risk assessments. Secondly, it confirmed that the assessment of sublethal effects on behaviour is needed for adequate **risk assessment** of potentially deleterious' compounds with a neurogenic target, as is also pointed out in the recent European Food Safety Authority (EFSA) guidelines.

Incorporating low doses epidemiology data in a Chlorpyrifos risk assessement

Goodman, JE; Prueitt, RL; Rhomberg, LR

DOSE-RESPONSE, 11 (2):207-219 (2013) 10.2203/dose-response.12-022.Goodman

Abstract: USEPA assessed whether epidemiology data suggest that fetal or early-life chlorpyrifos exposure causes neurodevelopmental effects and, if so, whether they occur at exposures below those causing the current most sensitive endpoint, 10% inhibition of blood acetylcholinesterase (AChE). (…) Because animal data take into account the most sensitive lifestages, the use of AChE inhibition as a regulatory endpoint is protective of adverse effects in sensitive populations.

Demography and Modeling To Improve Pesticide Risk Assessment of Endangered Species

Stark, JD

PESTICIDE REGULATION AND THE ENDANGERED SPECIES ACT, 1111 259-270 (2012)

Proceedings Paper: Symposium on the Endangered Species Act and Pesticide Regulation: Scientific and Process Improvements / 242nd Meeting of the American-Chemical-Society **Conference Date:** AUG 30-SEP 01, 2011 **Conference Location:** Denver, CO

Abstract: The present ecological risk assessment process for **pesticides** as practiced by the United States Environmental Protection Agency under the Federal **Insecticide**, **Fungicide**, and Rodenticide Act (FIFRA) consists of developing short-term toxicity data for a few select species and comparing these data to expected environmental concentrations to develop risk quotients (RQ). (…) In this chapter, the current risk assessment process and new approaches to improve risk assessment of **pesticides** are discussed. The new approach consists of developing population-level measures of toxicant effect that incorporate the total effect (lethal and multiple sublethal effects) followed by population modeling to determine the probability that specific concentrations of **pesticides** will drive populations to extirpation or whether populations will recover.

Absorption and excretion of organophosphorous insecticide biomarker's of malathion in the rat: Implications for overestimation bias and exposure misclassification from environmental biomonitoring

Chen, L; Zhao, T; Pan, C; Ross, J; Ginevan, M; Vega, H; Krieger, R

REGULATORY TOXICOLOGY AND PHARMACOLOGY, 65 (3):287-293 (2013); 10.1016/j.yrtph.2012.12.010

Abstract: Malathion is an organophosphorous (OP) insecticide widely used for crop protection. Its degradates, malathiondiacid (MDA), malathion monoacid (MMA), dimethylphosphate (DMP), dimethylthiophosphate (DMTP) and dimethyldithiophosphate (DMDTP) are formed in strawberries and other produce. These same chemical biomarkers are measured in urine in human studies as quantitative measures of exposure. (…) This has profound implications for epidemiology studies where subject's biomarker excretion is used as a surrogate for OP exposures that cannot be related to a particular insecticide residue.

Vers de terre et pesticides

Terrestrial invertebrates as bioindicators: an overview of available taxonomic groups

Gerlach, J; Samways, M; Pryke, J

JOURNAL OF INSECT CONSERVATION, 17 (4):831-850 (2013) 10.1007/s10841-013-9565-9

Abstract: Bioindicators, as taxa or functional groups, are widely used as indicators of environmental

change, specific ecological factors or taxonomic diversity. The use of ecological, environmental and biodiversity indicators, is reviewed here. (…)

Comparative toxicity of two glyphosate-based formulations to Eisenia andrei under laboratory conditions

Piola, L; Fuchs, J; Oneto, ML; Basack, S; Kesten, E; Casabe, N

CHEMOSPHERE, 91 (4):545-551 (2013) 10.1016/j.chemosphere.2012.12.036

Abstract: Glyphosate-based products are the leading post-emergent agricultural herbicides in the world, particularly in association with glyphosate tolerant crops. However, studies on the effects of glyphosate-based formulations on terrestrial receptors are scarce. This study was conducted to evaluate the comparative toxicity of two glyphosate-based products: Roundup FG (monoammonium salt, 72% acid equivalent, glyphosate-A) and Mon 8750 (monoammonium salt, 85.4% acid equivalent, glyphosate-B), towards the earthworm Eisenia andrei. (…) Our results highlight the importance of ecotoxicological assessment not only of the active ingredients, but also of the different formulations usually employed in agricultural practices.

Droit et politique de l'environnement

ANEC - ASI CC conference proposes options to enhance the chemical safety of products

Communiqué de presse de l'ANEC suite à la conférence du 29 octobre 2013 'Hazardous chemicals in products, the need for an enhanced EU regulation'.

Extrait: According to the hosts, national regulations or other rules (such as those set by the Council of Europe) exist, or are in preparation, for various products. They propose these could be transformed into European legislation with relative ease. Initiatives in these sectors could aid the commitment of the 7thEnvironmental Action Programme to achieve a toxic-free Europe. Nevertheless, such initiatives need to be part of a systematic approach tochemicals in consumer products, one settingbroad principles and strategies for all products, as well as provisions for product-specific requirements, information, monitoring and market surveillance.

le programme est consultable sur : http://www.anec.eu/attachments/Conference%20programme%206%20October.pdf

EU consumers meeting questions success of REACH: Hazardous chemicals in products

Information extraite du site Chemical news le 31 October 2013.

Lors d'un meeting organisé par l'ANEC, (European consumer voice in standardisation), intitule: 'Hazardous chemicals in products, the need for an enhanced EU regulation' les lacunes de la règlementation REACH ont été pointées.

REACH and EU sector-specific regulations are not doing enough to protect consumers from hazardous chemicals in articles, warned national authorities and downstream industry at a conference organised by Anec, which represents consumers in standardisation.

A lack of specific requirements for consumer products means REACH is not enough to manage the risks, the meeting's attendees agreed. Franz Fiala, chair of the Anec environment working group and head of the Consumer Council at the Austrian Standards Institute (ASI), compared the legislation to "an emmental cheese; it's a framework with some substance, but with lots of gaps". (…)

"REACH is not an instrument to regulate chemicals in products, and it is not a substitute for products' regulation – its main benefit is that it's a good instrument to gather data," said Dr Fiala. "There are virtually no specific requirements for products, but mainly general rules. Where there are provisions in place, they still show considerable gaps."

According to the meeting, the gaps that need to be filled are: materials in contact with drinking water; emissions to indoor air; textiles; and toys. (…)

EEA Part B - Emerging lessons from ecosystems

Volet B du rapport de l'Agence Européenne pour l'environnement : Late lessons from early warnings: science, precaution, innovation (janvier 2013).

Part B focuses on emerging lessons from the degradation of natural systems and their wider implications for society - booster biocides, the pill and the feminisation of fish, climate change, floods, insecticides and honeybees as well as ecosystem resilience more broadly.

It considers, like its predecessor, the issues of scientific evidence as the basis for action/inaction, the multiple, often complex factors and feedback loops in play, many of which are not fully understood, as well as the interfaces between science, policy and society and how all actors can move together towards necessary actions in the context of heightened systemic risks, and substantial unknowns.

Accès au document

Pesticides : Effets sur la santé - Une expertise collective de l'Inserm

13/06/2013 Une nouvelle expertise collective de l'Inserm vient faire le point sur les connaissances relatives aux effets des pesticides sur la santé.

L'ensemble des données concernant les expositions professionnelles et les expositions précoces (fœtus et jeunes enfants) ont été analysées. Accès au document

Pour en savoir plus : lire le dossier de presse télécharger la synthèse de l'expertise collective

Des recherches pluri- et trans-disciplinaire doivent être soutenues pour permettre une caractérisation plus rapide des dangers potentiels des substances actives de pesticides.

Le Gouvernement prend connaissance des résultats de l'expertise collective sur les risques associés aux pesticides conduite par l'INSERM

Communiqué de presse du Ministère de l'écologie 14/06/2013.

A la suite d'une saisine du ministère des Affaires sociales et de la Santé, l'Institut National de la Santé et de la Recherche Médicale (INSERM) a rendu public ce jour les résultats d'une expertise collective sur les risques sanitaires associés aux expositions aux pesticides1.

Marisol TOURAINE, ministre des Affaires sociales et de la Santé, Delphine BATHO, ministre de l'Écologie, du Développement durable et de l'Énergie et Stéphane LE FOLL ministre de l'Agriculture, de l'Agroalimentaire et de la Forêt ont pris connaissance de cette étude dont les recommandations devront faire l'objet d'une analyse précise en lien avec les orientations déjà prises dans le cadre du plan Ecophyto, de la révision des tableaux de maladies professionnelles, de la stratégie nationale sur les perturbateurs endocriniens ou de l'organisation du suivi post autorisation de mise sur le marché des produits phytosanitaires dont l'organisation sera précisée dans la loi d'avenir pour l'agriculture. (…)

Le Ministre de l'Agriculture a par ailleurs saisi l'ANSES afin qu'elle évalue l'impact de ces nouvelles données sur les autorisations nationales existantes.

Télécharger le communiqué de presse (PDF - 68 Ko)

Accès au document

Plan national santé environnement 2009-2013. Le point sur les grands chantiers

29/05/2013 Ministère du Développement durable / Direction générale de la prévention des risques 28 pages - Format A6

Lancé en 2009 pour une période de quatre ans, le deuxième plan national santé environnement fait l'objet d'un suivi régulier par le groupe santé environnement (GSE). … le groupe dresse un bilan annuel des principales réalisations en matière de qualité de l'air, de recherche, de contrôle des produits chimiques et d'identification des points noirs environnementaux.

Le rapport complet (75 pages) est disponible sur le site du Ministère.

Voir p 56 / fiche 13/ l'action Action 42 Améliorer le dispositif de surveillance et d'alerte Pilote de l'action : DGS

• Renforcer le dispositif de toxicovigilance, en l'inscrivant dans la loi, en imposant aux responsables de la mise sur le marché de substances ou mélanges et aux professionnels de santé la déclaration aux centres antipoison et de toxicovigilance (CAPTV) des cas d'intoxication humaine induits par ces produits ainsi que les informations sur leur composition.

Voir aussi page 57, l'Action 46 Renforcer la réglementation, la veille, l'expertise et la prévention des risques sur les nanomatériaux (décline l'engagement 159 du Grenelle)

Voir la fiche 9 portant sur l'eau : Deuxième axe, des mesures visant à réduire les apports de substances dangereuses dans l'eau (action 29) et, plus généralement, de rejets de substances pouvant se retrouver dans l'eau avec en particulier les HAP, les nitrates, les pesticides et certaines substances chimiques les plus toxiques

Voir la fiche 10 portant sur les sites à risque. Action 34 : Renforcer la gestion des sites et sols pollués (décline les engagements 241 et 242 du Grenelle) Pilote de l'action : DGPR

Accès au document

Débats Articles Questions parlementaires

EFSA Event: Stakeholder conference - Transparency in Risk Assessment

La conférence s'est tenue le 3 octobre 2013 à Parme. Le texte des interventions est accessible en ligne.

Présentation: The conference is part of an initiative EFSA launched in January 2013, designed to facilitate public access to data used by the Authority in risk assessments and to enhance transparency in its scientific decision-making processes....

EFSA's transparency initiative is in line with its Science Strategy for 2012-2016, which highlights the importance of making data more accessible to all interested parties.

Extrait: Group 3: Building better understanding of risk assessment

Accès au document

Le principe de précaution : entretien avec Jacqueline McGlade, Executive Director, European Environment Agency

In light of their recent report Late Lessons from Early Warnings, Volume II, European Environment Agency Executive Director Jacqueline McGlade discusses their findings and offers some fascinating insights on the use of the precautionary principle to protect the welfare of EU citizens

To download Late Lessons from Early Warnings: science, precaution, innovation visit www.eea.europa.eu/publications/late-lessons-2

Accès au document

Pesticides harm more than bees, says biologist's study

Le site phys.org commente l'article de D. Goulson: An overview of the environmental risks posed by neonicotinoid insecticides (Journal of Applied Ecology on 14 June 2013).

Soil organisms, aquatic life and farmland birds may all be harmed by neonicotinoid insecticides, according to a new study by University of Sussex biologist Professor Dave Goulson.

(…) Professor Goulson's study (…) draws together data from diverse sources including the agrochemical industry's own research, reveals that harm to bees may be just the tip of the iceberg. (…) According to the data neonicotinoids, if used regularly, accumulate in soil to concentrations far higher than those that kill bees, posing a risk to soil invertebrates and soil health.

Professor Goulson says: "Any pesticide that can persist for many years, build up in soil, and leach into waterways is likely to have effects far beyond the pest insects it intends to target. This is particularly

so when the pesticide is highly toxic to non-target organisms. For example, less than one part per billion of the neonicotinoid imidacloprid in streams is enough to kill mayflies."

The study also highlights risks for grain-eating birds such as partridge, which need eat only a few neonicotinoid-treated grains of crop to receive a lethal dose…

Accès au document

L'herbicide le plus vendu dans le monde, le glyphosate, contamine notre organisme

http://lesbrindherbes.org en date du 22 06 2013.

Les Amis de la Terre France ont détecté la présence d'un herbicide très répandu, le glyphosate, dans le corps de personnes testées. Les analyses ont révélé que, sur les 10 Français qui avaient accepté de faire analyser leurs urines, 3 étaient contaminés et présentaient des traces de glyphosate dans leurs urines. Une contamination de l'organisme qui est inquiétante et inacceptable…

Accès au document

Condamnation « nitrates » par la cour de justice de l'Union européenne : le Gouvernement rappelle ses actions en faveur de la qualité de l'eau

13/06/ 2013 Communiqué de presse du Ministère de l'écologie, du développement durable et de l'énergie

La France a été condamnée aujourd'hui par la Cour de justice de l'Union européenne pour manquement aux dispositions de la directive « nitrates » de 1991. La directive prévoit la désignation de « zones vulnérables », dans lesquelles des programmes d'actions s'appliquent. (…)

Cette condamnation était prévisible : elle sanctionne la faiblesse de l'action conduite par les Gouvernements précédents. Delphine BATHO, ministre de l'Écologie, du Développement durable et de l'Énergie, et Stéphane LE FOLL, ministre de l'Agriculture, de l'Agroalimentaire et de la Forêt, ont agi dès leur arrivée pour améliorer cette situation, notamment en révisant les périmètres des « zones vulnérables » en décembre 2012 par arrêtés des Préfets coordonateurs de bassin.

Liens : Accès au document

Textes officiels français

Produits phytosanitaires - Texte n°40

PROPOSITION DE LOI visant à mieux encadrer l'utilisation des produits phytosanitaires sur le territoire national, présentée par M. Joël LABBÉ et les membres du groupe écologiste.

Accès au document

Communiqué de presse - Santé des abeilles: l'utilisation des pesticides sera restreinte dans toute l'UE à compter du 1er décembre

Communiqué de presse de la Commission européenne Bruxelles, le 24 mai 2013

La Commission a décidé aujourd'hui de restreindre l'utilisation de trois pesticides appartenant à la famille des néonicotinoïdes. Ces pesticides (la clothianidine, l'imidaclopride et le thiaméthoxame) ont été jugés nocifs pour la population des abeilles d'Europe. Les restrictions entreront en vigueur le 1er décembre 2013 et seront réexaminées au plus tard dans un délai de deux ans. Elles visent des pesticides utilisés dans le traitement de végétaux, dont les céréales, attirant les abeilles et les pollinisateurs.

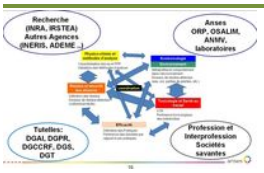
(…) La mesure d'aujourd'hui s'inscrit dans la stratégie globale adoptée par la Commission pour lutter contre le déclin de la population des abeilles d'Europe. (…)

Prochaines étapes : Les États membres doivent retirer ou modifier les autorisations existantes pour se conformer aux restrictions de l'UE d'ici le 30 septembre 2013. Ils peuvent autoriser l'utilisation des stocks existants jusqu'au 30 novembre au plus tard. (…)

Accès au document

Documents de référence

ANSES : Organisation de l'instruction des dossiers biocides 2013



Cette présentation est réalisée par Aurélie Chézeau, Unité de coordination des dossiers Biocides à la Direction des produits règlementés de l'ANSES.

La Direction des Produits Réglementés assure les actions d'évaluation des risques pour l'homme, l'animal ou l'environnement et des bénéfices en matière de :

-Produits biocides : instruction des dossiers et avis avant décision d'autorisation de mise sur le marché (AMM) par la DGPR (Environnement)

-Produits phytopharmaceutiques, adjuvants, matières fertilisantes et supports de culture: instruction des dossiers et avis avant décision AMM par la DGAl (Agriculture)

-Macro-organismes utiles aux végétaux: instruction des dossiers et avis avant arrêté conjoint : DGAl (Agriculture)/DEB (Environnement

-Substances/produits règlements REACh et CLP: préparation des dossiers et proposition de recommandation

A noter page 11 l'organigramme complet de la DPR au 01/09/2013 Liens : Accès au document

USA: Public Participation Process for pesticides Registration Actions

Aux USA, depuis 2010, les dossiers de demande d'autorisation de mise sur le marché sont consultables et mises en ligne par l'EPA (Environmental Protection Agency) pour commentaires pendant un mois. Nota : Des débats persistent sur la part des données considérées confidentielles qui ne sont donc pas portées au dossier public.

Le dispositif est présenté sur le site de l'EPA : http://www.epa.gov/pesticides/regulating/public-participation-process.html

Les dossiers en cours sont également postés sur le site du Federal register (Journal officiel des US) exemple : review docket for dithianon and flufenoxuron.

http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2013-0140-0001

Règlementation US CFR 40 : DATA REQUIREMENTS FOR PESTICIDES

Extrait du CFR (code of federal regulation) concernant les données requises pour la demande d'autorisation de mise sur le marché de pesticides.

TITLE 40—Protection of Environment / CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY / SUBCHAPTER E—PESTICIDE PROGRAMS / PART 158—DATA REQUIREMENTS FOR PESTICIDES

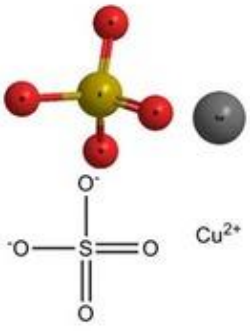
Le code est accessible en ligne, dans une version toujours à jour. A noter les parties :

Subpart F—TOXICOLOGY Toxicology data requirements table / Tiered testing options for nonfood pesticides.

Subpart G— ECOLOGICAL EFFECTS / Terrestrial and aquatic nontarget organisms data requirements table / Nontarget plant protection data requirements table.

Accès au document

NPIC Active Ingredient Fact Sheets



L'organisme américain NPIC (National Pesticide Information Center) propose sur son site des fiches sur les principaux composants des pesticides.

These fact sheets include Chemical Class and Type Physical / Chemical Properties / Uses / Mode of Action / Toxicity Classification / Acute Toxicity / Chronic Toxicity / Endocrine Disruption / Carcinogenicity / Reproductive and Teratogenic Effects / Fate in the Body / Medical Tests and Monitoring / Environmental Fate / Ecotoxicity Studies / Regulatory Guidelines.

Accès aux fiches

Glossaire pesticides

Glossaire mis en ligne par l'EPA (US environmental protection agency).

Accès au glossaire

Tout savoir sur les pesticides et leurs autorisations de mise sur le marché - Ministère de l'agriculture, de l'agroalimentaire et de la forêt

le 30/04/2013 le Ministère de L'agriculture a mis en ligne une page très détaillée sur ce thème, en particulier un schéma décrivant la procédure d'AMM.

Accès au document

Normes et Methodes

OCDE Essai n°301: Biodégradabilité facile (juin 2013)

Six méthodes qui permettent le classement des produits chimiques en fonction de leur biodégradabilité facile en milieu aqueux aérobie. Les méthodes sont l'Essai de disparition du COD, l'Essai de dégagement de CO2 (Essai de Sturm modifié), l'Essai MITI modifié (I) (Ministry of International Trade and Industry, Japon), l'Essai en flacon fermé, l'Essai de « screening » modifié de l'OCDE et l'Essai de respirométrie manométrique.

Accès au document

OCDE Essai n° 210 : Poisson, essai de toxicité aux premiers stades de la vie (Juin 2013)

Les premiers stades de vie des poissons sont exposés à cinq concentrations de la substance d'essai dissoute dans l'eau, de préférence dans des conditions de renouvellement continu du milieu, ou s'il y a lieu, dans des conditions semi-statiques. (…)

Accès au document

OCDE Essai n° 237: Essai de toxicité larvaire chez l'abeille domestique (*Apis mellifera*), par exposition unique (Juin 2013)

La présente Ligne directrice (LD) décrit un essai de toxicité aiguë sur un couvain d'abeilles dans des conditions de laboratoire. La méthode vise à déterminer la dose létale (DL50 à 72h) à la suite d'une exposition unique des larves à un produit chimique.

Accès au document

OCDE Essai n°236 : Poisson, essai de toxicité aiguë au stade embryonnaire (juin 2013)

Les œufs de poisson-zèbre fraîchement fécondés sont exposés au produit chimique testé durant une période de 96 heures. Le rapport d'étude inclut également un certain nombre d'informations relatives à la conduite de l'essai, dont la concentration d'oxygène dissous, le pH, la dureté totale, la température et la conductivité des solutions, les concentrations mesurées du produit chimique testé, et la réponse aux critères de validité de l'essai.

Accès au document

Projet européen LIFE BIOREG - Field and laboratory methods for the environmental evaluation of biocides

Projet: LIFE12 ENV/ES/000814)

Duration: 01-JUL-2013 to 30-JUN -2016

Total budget: 631,180.00 €

Coordinator: Fundacion TECNALIA Research & Innovation Spain

The main objective of the LIFE BIOREG project is to improve the quality and strength of biocidal risk assessments. The project hopes to develop new methodologies that will provide precise and robust data for conducting risk assessment of biocidal products, as well as more information on the influence on risk of different parameters.

It specifically aims to establish a scientifically validated methodology for the risk assessment of film preservatives (PT7) and masonry preservatives (PT10), which will be the next biocides studied and authorised under the biocidal products legislation.

Accès au document

Support de cours ITCR : Use of Risk Assessment in Management of Contaminated Sites

Aux Etats Unis, l'ITCR (Interstate Technology and Regulatory Council) propose des cours online. Les supports de cours sont accessibles, (les présentations power point, accompagnées du son, des explications des enseignants)

Parmi les derniers cours, des cours sur l'évaluation du risque :

-Determination and Application of Risk-Based Values

-Use of Risk Assessment in Management of Contaminated Sites

Mais aussi des cours plus techniques :

ITRC Soil Sampling and Decision Making Using Incremental Sampling Methodology - Part 1 et Part 2 (mai 2013)…

Accès aux documents

EFSA Info Session on Applications - Pesticides - Workshop with stakeholders on EFSA's Scientific Panel on Plant Protection Products and their Residues (PPR)

Guidance Document on tiered risk assessment for plant protection products for aquatic organisms in edge-of-field surface waters, Parma, 6 nov 2013.

EFSA's APDESK Unit, in collaboration with the Pesticides Unit, is organising a workshop with stakeholders to present and explain the content of the new EFSA "Guidance Document on tiered risk assessment for plant protection products for aquatic organisms in edge-of-field surface waters". EFSA is seeking to have an open dialogue on the issues raised during the public consultation on the draft Guidance Document which took place from December 2012 to February 2013.

New papers step up pressure on neonic risk assessments

Le 12/06/2013, le site agra.net signale deux articles parus dans la revue Toxicology qui remettent en question les méthodes d'évaluation du risque toxicologique.

Two new papers question the validity risk assessment methodologies widely accepted by regulators while registering neonicotinoid pesticides, widely believed to be a significant contributor to the widespread die-off of honeybees.

A more valid way of measuring the impact of neonicotinoids on honeybees and other pollinators would be to measure the effect the pesticides have over time at low doses typically encountered in the field, according to The Molecular Basis of Simple Relationships Between Exposure Concentration and Toxic Effects With Time, published by Toxicology.

Accès au document

Traits des invertébrés du sol

The use of traits-based approaches and eco(toxico)logical models to advance the ecological risk assessment framework for chemicals - Wageningen UR

Communique de presse : L'équipe de recherche de Wageningen Alterra en charge du thème Environmental exposure, ecotoxicology & risk assessment présente sur son site sa publication parue dans la revue Integrated Environmental Assessment and Management. Accès à la page Alterra

This paper presents a framework to diagnose and predict the effects of chemicals, integrating two promising tools to incorporate more ecology into ecological risk assessment, viz. traits-based approaches and ecological modelling. Traits-based approaches are increasingly used to derive correlations between the occurrence of species traits and chemical exposure from biological and chemical monitoring data.

Van den Brink, P. J., Baird, D. J., Baveco, H. and Focks, A. (2013), The use of traits-based approaches and eco(toxico)logical models to advance the ecological risk assessment framework for chemicals

Integr Environ Assess Manag, 9:e47–e57. doi: 10.1002/ieam.1443

Accès au document

Publications des membres du réseau ecotox

GammaProteobacteria as a potential bioindicator of a multiple contamination by polycyclic aromatic hydrocarbons (PAHs) in agricultural soils

Niepceron, M; Martin-Laurent, F; Crampon, M; Portet-Koltalo, F; Akpa-Vinceslas, M; Legras, M; Bru, D; Bureau, F; Bodilis, J

ENVIRONMENTAL POLLUTION, 180:199-205 (2013)

Abstract: The impact of a multiple contamination by polycyclic aromatic hydrocarbons (PAHs) was studied on permanent grassland soil, historically presenting low contamination (i.e. less than 1 mg kg(-1)). Soil microcosms were spiked at 300 mg kg-1 with either single or a mixture of seven PAHs. While total dissipation of the phenanthrene was reached in under 90 days, only 60% of the PAH mixture were dissipated after 90 days. Interestingly, after 30 days, the abundance of the GammaProteobacteria class (assessed by qPCR) become significantly higher in microcosms spiked with the PAH mixture. In addition, the specific abundance of the cultivable Pseudomonas spp., which belong to the GammaProteobacteria class, increased earlier and transiently (after 8 days) in the microcosms spiked with the PAH mixture. Consequently, we propose to use the GammaProteobacteria as a bioindicator to detect the impact on the bacterial community of a multiple contamination by PAHs in agricultural soils.

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DOI: 10.1016/j.envpol.2013.05.040

Accès au document

Use of diatom assemblages as biomonitor of the impact of treated uranium mining effluent discharge on a stream: case study of the Ritord watershed (Center-West France)

Herlory, O.; Bonzom, J. M.; Gilbin, R.; Frelon, S.; Fayolle, S.; Delmas, F.; Coste, M.

Ecotoxicology, 22 (8):1186-1199 (2013)

Abstract: The rehabilitation of French former uranium mining sites has not prevented the contamination of the surrounding aquatic ecosystems with metal elements. This study assesses the impact of the discharge of treated uranium mining effluents on periphytic diatom communities to evaluate their potential of bioindication. A 7-month survey was

conducted on the Ritord watercourse to measure the environmental conditions of microalgae, the non-taxonomic attributes of periphyton (photosynthesis and biomass) and to determine the specific composition of diatom assemblages grown on artificial substrates. The environmental conditions were altered by the mine waters, that contaminate the watercourse with uranium and with chemicals used in the pit-water treatment plants (BaCl 2 and Al 2(SO 4) 3). (…)

E-mail Address: olivier.herlory@gmail.com

DOI: 10.1007/s10646-013-1106-5

Accès au document

Transmission of DNA damage and increasing reprotoxic effects over two generations of *Daphnia magna* exposed to uranium

Plaire, Delphine; Bourdineaud, Jean-Paul; Alonzo, Antoine; Camilleri, Virginie; Garcia-Sanchez, Laurent; Adam-Guillermin, Christelle; Alonzo, Frederic

Comparative Biochemistry and Physiology. Toxicology & pharmacology, 158 (4):231-43 (2013)

Abstract: This study aimed to examine the mechanisms involved in the transgenerational increase in Daphnia magna sensitivity to waterborne depleted uranium (DU) under controlled laboratory conditions. Daphnids were exposed to concentrations ranging from 2 to 50 µgL(-1) over two successive generations. Genotoxic effects were assessed using random amplified polymorphic DNA and real time PCR (RAPD-PCR). Effects on life history (survival, fecundity and somatic growth) were monitored from hatching to release of brood 5. Different exposure regimes were tested to investigate the specific sensitivity of various life stages to DU.(…)

DOI: 10.1016/j.cbpc.2013.09.001

Accès au document

HylA, an alternative hydrolase for initiation of catabolism of the phenylurea herbicide linuron in Variovorax sp. strains

Bers, K.; Batisson, I.; Proost, P.; Wattiez, R.; Mot, R. de; Springael, D.

Applied and Environmental Microbiology, 79 (17):5258-5263 (2013)

Abstract: Variovorax sp. strain WDL1, which mineralizes the phenylurea herbicide linuron, expresses a novel linuron-hydrolyzing enzyme, HylA, that converts linuron to 3,4-dichloroaniline (DCA). The enzyme is distinct from the linuron hydrolase LibA enzyme recently identified in other linuron-mineralizing Variovorax strains and from phenylurea-hydrolyzing enzymes (PuhA, PuhB) found in Gram-positive bacteria. The dimeric enzyme belongs to a separate family of hydrolases and differs in Km, temperature optimum, and phenylurea herbicide substrate range. (…)

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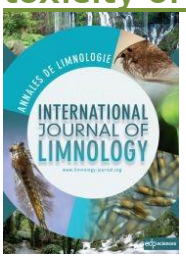
Accès au document

Role of the hyporheic heterotrophic biofilm on transformation and toxicity of pesticides



Sanchez-Perez, J. M.; Montuelle, B.; Mouchet, F.; Gauthier, L.; Julien, F.; Sauvage, S.; Teissier, S.; Dedieu, K.; Destrieux, D.; Vervier, P.; Gerino, M

Annales de Limnologie - International Journal of Limnology, 49 (2):87-95 (2013)

Abstract: The role of heterotrophic biofilm of water-sediment interface in detoxification processes was tested in abiotic and biotic conditions under laboratory conditions. Three toxicants, a herbicide (Diuron), a fungicide (Dimethomorph) and an insecticide (Chlorpyrifos-ethyl) have been tested in water percolating into columns reproducing hyporheic sediment. The detoxification processes were tested by comparing the water quality after 18 days of percolation with and without heterotrophic biofilm. (…)

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Accès au document

Increased nitrogen availability in soil after repeated compost applications: use of the PASTIS model to separate short and long-term effects

Chalhoub, M.; Garnier, P.; Coquet, Y.; Mary, B.; Lafolie, F.; Houot, S.

Source: Soil Biology & Biochemistry, 65 144-157; 2013

Abstract: Regular application of composts on cropped soils has been shown to restore soil organic matter contents. The effect of repeated applications of three urban composts on the nitrogen (N) dynamics in a cropped loamy soil was compared to farmyard manure application and a control receiving no amendment. Each amendment application brought on average 250-400 kg ha -1 of total N. After five applications, total organic N increased in amended soils from 9 to 27% compared to control and the increase of soil organic N corresponded to 32-79% of total N brought by the amendments. The PASTIS model was used to describe the N balance in the soil-plant system during the 2 years after a sixth amendment application and provided correct predictions of N dynamics in cropped plots. (…)

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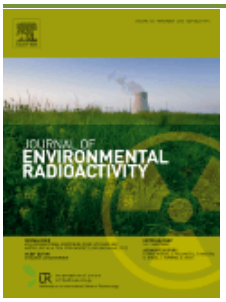
Accès au document

Translocation of 125I, 75Se and 36Cl to edible parts of radish, potato and green bean following wet foliar contamination under field conditions



Henner, P.; Hurtevent, P.; Thiry, Y.; Levchuk, S.; Yoschenko, V.; Kashparov, V.

Journal of Environmental Radioactivity, 124 171-184 (2013)

Abstract: Specific translocation factor values (ftr) for 129I, 79Se and 36Cl following foliar transfer are still missing from the IAEA reference databases. The translocation of the short-lived isotopes, 125I, 75Se, and 36Cl, to radish, potato and green bean edible parts was measured under field conditions following acute and chronic wet foliar contamination at various plant growth stages in the absence of leaching caused by rain. The translocation factors obtained for 125I ranged from 0.8 to 2.6% for radish, from 0.1 to 2.3% for potato and from 0.1 to 2.6% for bean. (…)

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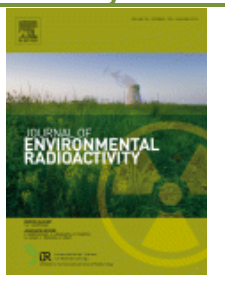
DOI: 10.1016/j.jenvrad.2013.05.012

Accès au document

TOCATTA: a dynamic transfer model of 3H from the atmosphere to soil-plant systems



Dizes, S. le; Aulagnier, C.; Henner, P.; Simon-Cornu, M.

Journal of Environmental Radioactivity, 124 191-204 (2013)

Abstract: This paper describes a dynamic compartment model (TOCATTA) that simulates

tritium transfer in agricultural plants of several categories including vegetables, pasture and annual crops, exposed to time-varying HTO concentrations of water vapour in the air and possibly in irrigation and rainwater. Consideration is also given to the transfer pathways of HTO in soil. Though the transfer of tritium is quite complex, from its release into the environment to its absorption and its incorporation within the organic material of living organisms, the TOCATTA model is relatively simple, with a limited number of compartments and input parameters appropriate to its use in an operational mode. (…)

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DOI: 10.1016/j.jenvrad.2013.04.015

Accès au document

Biotransformation of *Trichoderma* spp. and their tolerance to aromatic amines, a major class of pollutants

Cocaign, A.; Bui LinhChi; Silar, P.; Tong ChanHo [Tong, C. H. L.]; Busi, F.; Lamouri, A.; Mougin, C.; Rodrigues-Lima, F.; Dupret, J. M.; Dairou, J.

Applied and Environmental Microbiology, 79 (15):4719-4726 (2013)

Abstract: *Trichoderma* spp. are cosmopolitan soil fungi that are highly resistant to many toxic compounds. Here, we show that Trichoderma virens and T. reesei are tolerant to aromatic amines (AA), a major class of pollutants including the highly toxic pesticide residue 3,4-dichloroaniline (3,4-DCA). In a previous study, we provided proof-of-concept remediation experiments in which another soil fungus, Podospora anserina, detoxifies 3,4-DCA through its arylamine N-acetyltransferase (NAT), a xenobiotic-metabolizing enzyme that enables acetyl coenzyme A-dependent detoxification of AA. (…)

E-mail Addresses: jean-marie.dupret@univ-paris-diderot.fr, julien.dairou@univ-paris-diderot.fr.
Accès au document

Assessment of toxicity thresholds in aquatic environments: Does benthic growth of diatoms affect their exposure and sensitivity to herbicides?

Larras, Floriane; Montuelle, Bernard; Bouchez, Agnes

The Science of the total environment, 463-464 469-77 (2013)

Abstract: Benthic diatoms evolved in a biofilm structure, at the interface between water and substrata. Biofilms can adsorb toxicants, such as herbicides, but little is known about the exposure of biofilm organisms, such as benthic diatoms, to these adsorbed herbicides. We assessed the sensitivity of 11 benthic diatoms species to 6 herbicides under both planktonic and benthic conditions using single-species bioassays. The concentration that reduced the growth rate of the population by 10% (EC10) and 50% (EC50), respectively, varied depending on the species, the herbicides, and the growth forms involved. (…)

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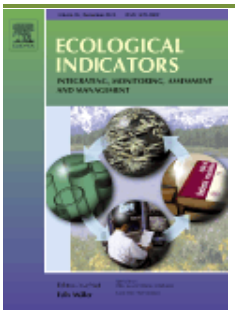
DOI: 10.1016/j.scitotenv.2013.06.063

Accès au document

Assessing the in situ bioavailability of trace elements to snails using accumulation kinetics



Pauget, B.; Gimbert, F.; Coeurdassier, M.; Crini, N.; Peres, G.; Faure, O.; Douay, F.; Richard, A.; Grand, C.; Vaufleury, A. de

Ecological Indicators, 34 126-135 (2013)

Abstract: The bioavailability of trace elements in soils is conditioned by both physico-chemical and biological parameters. In this study, the accumulation kinetics of cadmium (Cd), lead (Pb), arsenic (As) and antimony (Sb) were determined for 3 industrially impacted sites to assess the bioavailability of these contaminants to the garden snail (Cantareus aspersus). Mono and multivariate regressions allowed the identification of cation exchange capacity (CEC), silts and organic carbon content as the soil parameters modulating the in situ bioavailability of Cd and Pb. (…)

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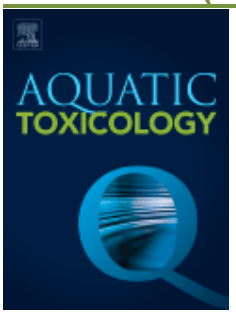
DOI: 10.1016/j.ecolind.2013.04.018

Accès au document

Sensitivity evaluation of the green alga *Chlamydomonas reinhardtii* to uranium by pulse amplitude modulated (PAM) fluorometry



Herlory, Olivier; Bonzom, Jean-Marc; Gilbin, Rodolphe

Aquatic Toxicology 140-141:288-94 (2013)

Abstract: Although ecotoxicological studies tend to address the toxicity thresholds of uranium in freshwaters, there is a lack of information on the effects of the metal on physiological processes, particularly in aquatic plants. Knowing that uranium alters photosynthesis via impairment of the water photo-oxidation process, we determined whether pulse amplitude modulated (PAM) fluorometry was a relevant tool for assessing the impact of uranium on the green alga Chlamydomonas reinhardtii and investigated how and to what extent uranium hampered photosynthetic performance. Photosynthetic activity and quenching were assessed from fluorescence induction curves generated by PAM fluorometry, after 1 and 5h of uranium exposure in controlled conditions. The oxygen-evolving complex (OEC) of PSII was identified as the primary action site of uranium, through alteration of the water photo-oxidation process as revealed by F0/Fv. Limiting re-oxidation of the plastoquinone pool, uranium impaired the electron flux between the photosystems until almost complete inhibition of the PSII quantum efficiency, EC50=303 64 µg UL(-1) after 5h of exposure) was observed. (…)

E-mail address: olivier.herlory@gmail.com

DOI: 10.1016/j.aquatox.2013.06.007

Accès au document

Colloques

Seminaire ANSES Santé des abeilles : état des connaissances et perspectives pour la recherche

Ce séminaire se tiendra à Maison Alfort le 21/11/2013

L'Anses consacrera une journée pour faire état des derniers travaux et publications en matière d'évaluation des risques et de recherche sur ce sujet. Parmi les sujets abordés :

-Toxicité chronique et impact sur les colonies : travaux de recherche en cours à L'INRA, Luc Beizunces

-Produits phytopharmaceutiques : méthodologies d'évaluation du risqye pour les abeilles selon le document de l'EFSA, Christine Vergnet Direction des produits règlementés/Anses

ECETOC reports on February 2013 workshop addressing 'omics

L'ECETOC a mis en ligne les actes de cette journée.

The aim of this workshop, that attracted scientists from industry, regulatory agencies and academia was to review progress on the application of 'omics technologies to chemical safety and assess their potential impact on the risk assessment of chemical substances.

Using several worked examples and case studies the participants of the workshop concluded that 'omics

data are particularly valuable for understanding modes of action (MoA)*. By studying exposure-associated differential gene expression patterns it is becoming possible to examine each key event in the pathway leading from an early molecular event in a cell to an adverse outcome, such as liver disease in an individual. Analysis of the most sensitive pathway for transcriptomics allows for a reasonable approximation of the NO(A)EL of an individual compound.

Progress is gaining pace and 'omics tools are being used to identify biomarkers and guide study design towards shorter more targeted studies with the potential to reduce the numbers of animal studies currently required to assess chemical safety.

Overall, it was concluded that with more standardisation in study protocols studies and a better understanding of the association of differentially expressed genes with modes of action the relevance of animal (or *in vitro*) data for human and environmental risk assessment will be improved by the inclusion of data obtained with 'omics technologies.

Accès au document

Journée Technique Actualités des sites et sols pollués et thématiques émergentes; 19 novembre 2013 - Paris

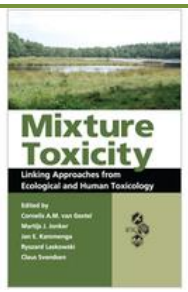
Le BRGM organise, en concertation avec le ministère de l'Ecologie, du Développement durable et de l'Energie (MEDDE), une journée technique d'information et de retour d'expérience sur la gestion des sols pollués.

Elle sera l'occasion de faire un point d'avancement sur les actions en cours (formations diplômantes, normalisation, diagnostics des sols dans les lieux accueillant des enfants et des adolescents, délimitation et maîtrise des sources, outil Selecdepol…), et une présentation de thématiques émergentes (spéciation du mercure, adjuvants pétroliers, mesures constructives).

Accès au document

Ouvrages - Rapports

Mixture Toxicity: Linking Approaches from Ecological and Human Toxicology



Nouvelle acquisition de la Doc de PESSAC.

Editors: Cornelis A. M. van Gestel, Martijs Jonker, Jan E. Kammenga, Ryszard Laskowski, Claus Svendsen

In the last decade and a half, great progress has been made in the development of concepts and models for mixture toxicity, both in human and environmental toxicology. However, due to their different protection goals, developments have often progressed in parallel and with little integration. Arguably the first book to clearly link ecotoxicology and classic human toxicology, Mixture Toxicity: Linking Approaches from Ecological and Human Toxicology incorporates extensive reviews of exposure to toxicants, toxicokinetics and toxicodynamics, toxicity of mixtures, and risk assessment. Taking an unusual approach from exposure to risk assessment that explores the perspectives of ecotoxicologists, human health specialists, and risk assessors, this book:

-Compares and contrasts the current state of the art in each field and identifies where one can learn from the other,

-Includes a broad and detailed review of problems related to realistic exposure to pollutants, with special emphasis on exposure to mixtures of toxicants and their combined effects on organisms,

-Presents state-of-the-art information based on in-depth discussions among specialists representing different disciplines and approaches.

Mercury in contaminated sites: identification, characterization, remediation, impact

Numéro spécial de la revue Environmental Research d'Août 2013, 206 pages, Volume 125.

A noter les articles :

Characterization of soils from an industrial complex contaminated with elemental mercury

Pages 20-29

Study on the reduction of atmospheric mercury emissions from mine waste enriched soils through native grass cover in the Mt. Amiata region of Italy *Pages 69-74*

Mercury contaminated sediment sites—An evaluation of remedial options *Pages 131-149*

Accès au document

ECETOC TR117: Understanding the relationship between extraction technique and bioavailability 27 May 2013

Technical report: In environmental risk assessment, chemical residues in soils and sediments are considered insignificant if they are bound to the solid matrix and hence are not available to plants and soil organisms. Improved understanding of the mechanisms of binding which can contribute to the rationale for defining appropriate extraction methods is important as well as the threshold where extractive techniques start to destroy the sample matrix. The aim of this ECETOC Report was to develop a standard framework for extraction methods which associates the extractable fractions with both a level of bioavailability and appropriate test organisms for the environmental compartment. It was considered vital to identify and define appropriate key terms, such as the residue categories (dissolved, rapidly desorbed, slowly desorbed, irreversibly desorbed and assimilated) as well as the terms bioavailable and bioaccessible, which are aligned with the various residue types within the framework model.

Accès au document

Soil Contamination: Impacts on Human Health

Rapport européen de la serie In-depth Report from Science for Environment Policy rédigé par des experts de la Communauté européenne. Septembre 2013.

In the European context, the health impacts of long-term, low-level (or 'chronic') exposure to soil contaminants is of particular interest, and decision makers and researchers have both noted the lack of information in this area. However, the study of soils and human health is a complicated endeavour; singling out a single contaminant to study in isolation does not necessarily offer scientists a true picture of the complex relationships between contaminants, soil and health at work in real life situations.

This In-depth Report from Science for Environment Policy draws on current research and case studies from a number of scientific disciplines that investigate the interaction between contaminated soils and human health.

It explains contaminant pathways from soil into the human body and some of the varied properties of soils are also briefly considered; these are an important factor in determining how much of a contaminant is available, both to the human body, and for transport around the surrounding environment....

Accès au site

BEYOND THE BIRDS AND THE BEES Effects of Neonicotinoid Insecticides on Agriculturally Important Beneficial Invertebrate

Rapport de 32 pages de l'association américaine The Xerces Societyfor invertebrate conservation.

Jennifer Hopwood, Scott Hoffman Black, Mace Vaughan, and Eric Lee-Mäder

This report moves the spotlight from the risks neonicotinoids pose to bees to the impacts of neonicotinoids to invertebrates such as earthworms or lady beetles. It gives a comprehensive review of published articles and pulls together the growing body of research that demonstrates risks from neonicotinoids to these beneficial insects. The reports finds that use of neonicotinoid seed treatments on annual field crops has increased dramatically in the last decade yet these treatments may not consistently result in yield benefits and can be less cost effective than other control measures. The report also notes that it is very challenging for farmers to obtain non-organic field crop seed that is not treated with neonicotinoids. Although there has been less research on the impact of neonicotinoids to soil organisms, most studies to date have found that neonicotinoids may have negative effects on earthworms and other soil invertebrates. Based on the report, the Xerces Society makes several recommendations regarding neonicotinoid use.

Accès au document

Rapport de EEA juillet 2013 : Populations of grassland butterflies decline almost 50 % over two decades

This dramatic decline in grassland butterflies should ring alarm bells – in general Europe's grassland habitats are shrinking. If we fail to maintain these habitats we could lose many of these species forever.

Hans Bruyninckx, EEA Executive Director

The fall in grassland butterfly numbers is particularly worrying, according to the report, because these butterflies are considered to be representative indicators of trends observed for most other terrestrial insects, which together form around two thirds of the world's species. This means that butterflies are useful indicators of biodiversity and the general health of ecosystems.

Seventeen butterfly species are examined in 'The European Grassland Butterfly Indicator: 1990–2011', comprising seven widespread and 10 specialist species. Of the 17 species, eight have declined in Europe, two have remained stable and one increased. For six species the trend is uncertain.

Butterflies examined in the report include the Common Blue (*Polyommatus icarus*), which has declined significantly, the Orangetip (*Anthocharis cardamines*), which seems to be stable since 1990, and the Lulworth Skipper (*Thymelicus acteon*), which shows an uncertain trend over the last two decades.

Hans Bruyninckx, EEA Executive Director, said: "This dramatic decline in grassland butterflies should ring alarm bells – in general Europe's grassland habitats are shrinking. If we fail to maintain these habitats we could lose many of these species forever. We must recognise the importance of butterflies and other insects – the pollination they carry out is essential for both natural ecosystems and agriculture."

Accès au document

En Bref / Focus

EU JRC gathers experience on use of nano definition

The European Commission's Joint Research Centre (JRC) has been collecting information on the experience of use of the official EU nano definition. The work is being carried out in preparation for the European Commission's review of its 2011 recommended definition of nanomaterials.

The need to review the definition is set out in the 2011 Recommendation itself, in order to take account of scientific and technological developments, as well as experience (GBB November 2011).

The JRC says it invited key actors to provide feedback on their experience with the implementation of the definition. Over 60 replies were received in response to the survey, which recently closed. It is now starting to analyse them, and plans to summarise the findings in a report to be published by spring 2014.

Accès au document

OCDE: Cooperation on Risk assessment (nanomaterials)

Rapport publié le 21 aout 2013 dans la série : Series on the Safety of Manufactured Nanomaterials No. 38.

Il a pour theme: PRIORITISATION OF IMPORTANT ISSUES ON RISK ASSESSMENT OF MANUFACTURED NANOMATERIALS et rend compte des travaux du groupe de travail IOMC (inter-Organisation Programme for the Sound Management of Chemicals).

L'objectif était de définir les priorités de recherche en vue de la mise en place des procédures d'évaluation des nano matériaux. (à noter, la méthode pour identifier et classer les problèmes à traiter : un inventaire, puis un rapprochement thématique, puis une approche de travail collaboratif utilisant le mindmapping).

Europe : spotlight on nanoparticles' imperceptible effects

Article paru sur le site Cordis le 23 09 2013. qui présente le projet NANO-ECOTOXICITY qui étudie l'impact des nanoparticules dans le sol.

NANO-ECOTOXICITY is one of several EU-funded projects trying to set things straight. Looking into metal nanoparticles (NPs), it builds on observations that these particles will increasingly end up in soils and that reliable data is missing regarding their uptake by, and potential effects on, soil organisms. The team coordinated by Dr Claus Svendsen has performed toxicity tests to evaluate the effect of zinc oxide (ZnO) and silver (Ag) NPs on earthworms (*Eisenia andrei* and *Lumbricus rubellus*), with the aim of shedding light on the main uptake routes of metal NPs in these organisms.

Dr Maria Diez-Ortiz, research leader of the NANO-ECOTOXICITY project, tells us about her research findings and how she expects them to help increase knowledge and shape tools allowing for standard environmental hazard and risk-assessment methodologies....

Since nanoparticles (NPs) are similar in size to viruses, their uptake by and transport through tissues are based on mechanisms distinct from those of molecular uptake and transport. Therefore, there is concern that standard toxicological tests may not be applicable or reliable in relation to NPs, hence compromising current risk-assessment procedures....

This project deals with the toxicokinetics - that is, the rate at which a chemical enters a body and affects it - of metal nanoparticles coming into contact with soil-dwelling organisms. The aim is to determine NPs' fate and effects in terrestrial ecosystems by means of case studies with zinc oxide and silver NPs, which represent different fate kinetics.

The project's main objectives are to assess the toxicity of metal nanoparticles in soils in the short and long term; the main route of exposure for earthworms and whether it differs from those of ionic metals; and, finally, the influence of the exposure media on metal nanoparticle toxicity...

...This project has finished but the next step for any other funding opportunity would be to address increasingly environmentally relevant exposure scenarios by analysing how nanoparticles modify in the environment and interact with living tissues and organisms at different trophic levels. I would like to investigate nanoparticle transformation and interactions in living tissues. To date, the studies that have identified this 'excess' accumulation of non-toxic metal loads in nanoparticle exposed organisms have only been short term.

For more information, Natural Environment Research Council http://www.nerc.ac.uk

http://cordis.europa.eu/projects/rcn/98218_en.html

Accès au document

REACHnano - Development of a web based REACH Help Desk to support the chemical safety assessment of nanomaterials

Project reference: LIFE11 ENV/ES/000549

Duration: 01-OCT-2012 to 30-SEP -2015

Total budget: 915,861.00 €

Coordinator: ITENE - Research institution

Dans le cadre du programme européen LIFE, ce projet poursuit les objectifs suivants :

The 'REACHnano' project aims to provide the industry and stakeholders with easy-to-use tools to support the risk assessment of nanomaterials along their lifecycle. It thus seeks to support the implementation of the REACH regulation with regard to nanomaterials and ultimately improve the protection of the environment and human health from risk. The project seeks to consolidate the knowledge base on nanomaterials-related risk and risk assessment. It will collect and evaluate the adequacy of the available information on the physicochemical, toxicological and ecotoxicological properties of nanomaterials and related exposure-, use- and risk-management measure.

'REACHnano' plans to develop a complete selection of standard testing models to be used in the risk characterisation process for nanomaterials and a complete description of the current exposure scenarios across the nanomaterials lifecycle.

Accès au document

Driving innovation: How stronger laws help bring safer chemicals to market

Rapport du CIEL (Center for International Environmental Law) Fevrier 2013 36p.

La reglementation REACH a suscité de nombreuses innovations dans l'industrie chimique. Analyse basée sur l'étude des brevets.

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Chapter 5 Stricter chemical laws can direct resources towards innovation and the development of safer alternatives 26

Chapter 6 Conclusions and recommendations for policy maker.

Accès au document

Les pesticides dans les eaux douces : rapport du CGDD 07/2013

Commissariat général au développement durable a mis en ligne en Juillet 2013 un état de lieux de la pollution des cours d'eau par les pesticides.

Extrait : Si les pesticides ont initialement un rôle de protection des cultures, ils présentent in fine, par leur migration dans les différents milieux, des dangers pour l'homme et les écosystèmes, avec un impact immédiat ou à long terme. La contamination des cours d'eau est quasi-généralisée en France, essentiellement par des herbicides en métropole et des insecticides en outre-mer...

Accès au document

Les Antilles malades du chlordécone

La revue Alternatives économiques de Septembre 2013 consacre trois pages à ce sujet.

Extrait : Sous la pression des lobbies bananiers, l'Etat a autorisé l'usage d'un pesticide ultratoxique en Guadeloupe et Martinique. Au mépris de la santé de la population.

Chlordécone, Képone, Curione… les noms changent mais les effets demeurent : toxique et persistant, ce produit s'infiltre dans les sols et les nappes phréatiques et contamine toute la chaîne alimentaire.

Massivement utilisé dans les bananeraies entre 1981 et 1993 en Guadeloupe et en Martinique contre un champignon (le cercosporiose) et un parasite (le charançon), ce pesticide est au centre d'un scandale sanitaire méconnu.

Accès au document

On respirait des fumées de dioxine

Exemple de pollution des sols... Dans quelques semaines s'ouvrira à Paris le procès du groupe Chimirec et de sa filiale Aprochim. La société,

spécialisée dans la collecte de produits dangereux et la dépollution, avec 14 sites en France, est accusée d'avoir dilué des huiles contaminées au PCB, plus connu sous le nom de pyralène, provenant essentiellement de transformateurs électriques, au lieu de les décontaminer. La fraude a duré au moins de 2000 et 2006. L'affaire était très rentable : Chimirec était payé 230 euros la tonne par celui qui voulait se débarrasser de l'huile contaminée. Au lieu d'être traitée, l'huile était diluée avec d'autres huiles de récupération et revendue jusqu'à 450 euros la tonne.

Fausses déclarations à la préfecture et à la direction régionale de l'industrie, faux certificats de destruction de déchets, transports clandestins de produits dangereux, tout était fait pour masquer la fraude. Contactée, la direction de Chimirec conteste l'ensemble du dossier et parle d'"erreurs éventuelles susceptibles de simples contraventions". Elle conteste qu'il y ait un eu système organisé de dilution.

Accès au document