CHEMTrust
Für den Schutz von Mensch und Umwelt vor gefährlichen Chemikalien

Ausgewählte Publikationen mit Time-Trend-Studien von bedenklichen Chemikalien in der deutschen Allgemeinbevölkerung

Short title	Sampling period	Description	Properties of high concern[1]	Function and use	SIN List[2]	Literature
Time trend of DEHTP exposure	1999 - 2017	• Investigation of DEHTP in 24-hour urine samples from 1999-2017 • Rapid increase of exposure was found: DEHTP increased from 10% of the study participants to 100% from 2009 to 2017 • This mirrors the increase in production and use as DEHP replacement • Important to monitor increasing trends, in particular for children	Currently not classified.	Plasticizer; replacement of e.g. DEHP. Use in a wide range of products, including plastic flooring materials, consumer goods, toys, food contact materials, and medical devices.	no	German Environmental Specimen Bank: 24-hour urine samples from 1999 to 2017 reveal rapid increase in exposure to the para-phthalate plasticizer di(2-ethylhexyl) terephthalate (DEHTP) F. Lessman et al. (2019)
Time trend of DINCH exposure	1999 - 2017	• Investigation of DINCH in 24-h urine samples from 1999-2017 • Rapid increase of exposure was found: DINCH was detected the first time in 2006 and since 2013 it has been found in all investigated samples • The levels of exposure to DINCH has quadrupled between 2010 and 2017 • Exposure levels in humans reflect market volumes of DINCH	Currently not classified.	Plasticizer: substitute mainly for DEHP and DiNP in PVC. Use in consumer products, including toys, FCM and medical devices (since 2002)	no	Time trend of exposure to the phthalate plasticizer substitute DINCH in Germany from 1999 to 2017: Biomonitoring data on young adults from the Environmental Specimen Bank (ESB) M. Kasper-Sonnenberg et al. (2020)
Time trend of DPHP exposure	1999 - 2017	• Investigation of DPHP in 24-h urine samples from 1999-2017 • DPHP exposure increased between 2009 and 2011 and then remained constant, reflecting market trends. • DPHP is found in lower concentrations than other plasticizers • Future studies recommended for subpopulations like children who may be exposed at higher levels to these new phthalates with less data available	Currently not classified Indications of endocrine disrupting effects	Plasticizer: substitute mainly for DEHP and DiNP in PVC. Mainly used in technical applications; advised against use in toys, not approved for FCM or medical devices	no	Internal exposure of young German adults to di(2-propylheptyl) phthalate (DPHP): Trends in 24-h urine samples from the German Environmental Specimen Bank 1999–2017 C. Schmidtkunz et al. (2019)
Time trend of PFAS exposures	1982 - 2019	• Investigation of 33 PFAS compounds in human blood samples from 1982-2019 • PFOA and PFOS were found in every sample • PFHxS in 95% and PFNA 82 % of samples • Concern about impacts on human health cannot be excluded • Total human exposure likely underestimated due to many unknown and unidentified PFAS	Variety of adverse effects; many PFAS are highly persistent, bioaccumulative, carcinogenic, reprotoxic and/or endocrine disrupting Examples: PFOA: SVHC PBT and Repro 1B PFOS: SVHC Carc. 2 and Repro 1B PFNA: SVHC PBT, Repro 1B	Dirt, water and grease repellence; various uses - for consumers, amongst others: outdoor clothing, food packaging cook wear; PFOA used for the production of other fluoropolymers (e.g. PTFE)	PFOA PFNA PFDA PFUdA PFDoA PFBS PFOS	Human biomonitoring of per- and polyfluoroalkyl substances in German blood plasma samples from 1982 to 2019 B. Glöckener et al. (2020)
Time trend of expo-sures to methylisothia zolinone (MI/MCI)	2000 - 2017	• Investigation of MI/MCI in 24-h urine samples from 1999-2017 • Detected in all samples • Regulation of MI/MCI in cosmetics probably led to declining exposure trends, but other sources in household products seem to remain	MI: harmonized classification as skin sensitizer MCI: indications that substance is a skin sensitizer	Biocides in cosmetics, water-based paints and cleaning agents; used as mixture Used as replacement of parabens in cosmetics	no	*N*-methylmalonamic acid (NMMA) as metabolite of methylisothiazolinone and methylchloroisothiazolinone in 24-h urine samples of the German Environmental Specimen Bank from 2000 to 2017 - exposure and time trends T. Schettgen et al. (2020)
Time trend of lead exposure	1981 - 2019	• Investigation of lead in blood samples from 1981-2019, covering a period of 38 years • Blood lead levels steadily decreased over 85% from 1981 to 2010 and then did not decrease further • Current blood lead levels are still considered unsafe, so that previous regulatory measurements need to be improved to address remaining exposure	SVHC Repro 1A Indications that the substance is a Carcinogenic	lead-acid batteries, pollutant in food, drinking water and air	yes	Long-term time trend of lead exposure in young German adults – Evaluation of more than 35 Years of data of the German Environ-mental Specimen Bank D. Lermen et al. (2021)
Time trend of lysmeral exposure	2000 - 2018	• Investigation of lysmeral in 24h-urine samples from 2000-2018 • Detection in nearly all samples: concentration generally declined but still sensitizing and adverse effects on fertility cannot be excluded • Therefore, exposure should be reduced, and levels need to be monitored • Concern about combined exposures to other synthetic chemicals (mixture effects)	Harmonized classification Repro. 1B Indications that the substance is an EDC and has skin sensitizing properties	Fragrance in cosmetics, personal care products, laundry detergents, air fresheners	no	Human biomonitoring in urine samples from the Environmental Specimen Bank reveals a decreasing trend over time in the expo-sure to the fragrance chemi-cal lysmeral from 2000 to 2018 M. Scherer et al. (2021)

Time trend of 7-Hydroxyci-tronellal exposure	2000 - 2018	• Investigation of 7-HC in 24-h urine samples from 2000-2018 • Detected in all samples while the exposure levels overall declined over the 18 years • 7-HC could be detected in every sample and is mostly found in personal care products: skin sensitizing effects cannot be excluded • Therefore, exposure should be reduced, and levels need to be monitored • Concern about combined exposures to other synthetic chemicals (mixture effects)	Indications that substance is a skin sensitizer	Fragrance in cosmetics, personal care products, laundry detergents, air fresheners	no	Biomonitoring data on young adults from the Environmental Specimen Bank suggest a decrease in the exposure to the fragrance chemical 7-hydroxycitronellal in Germany from 2000 to 2018 N. Pluym et al. (2020)
Time trend of butylated hydroxyto-luene (BHT) exposure	2000 - 2018	• Investigation of BHT in 24-h urine samples from 2000-2018 • Constant exposure levels over the 18 years, resulting from many different uses • Daily intake levels may partly be exceeded (uncertainties due to limited data regarding the human metabolism of BHT) • Co-exposure with other potentially EDCs is of high concern and need to be considered and monitored	Indications that substance is an EDC	Antioxidant as food additive and in animal feed, in cosmetics, pharmaceuticals, food packaging, plastics, rubber and fuel additive	yes	A biomonitoring study assessing the exposure of young German adults to butylated hydroxytoluene (BHT) C. Schmidtkunz et al. (2020)
Time trend of phthalate risks to male development health	1988 - 2015	• Calculation of mixture effects of 5 phthalates based on 24 h urine samples from covering a period of 27 years • Exposure has shifted from high levels of a few individual phthalates to medium levels of many different phthalates • Mixture risk assessment showed exceedance of acceptable exposures (in earlier years often driven by DBP and DEHP) • Mixture risk assessment needs to include other anti-androgenic substances, which would justify lowering the hazard index of 0.1 for the phthalates to avoid exceedance of risk • Emerging exposure to multiple phthalates poses a challenge to monitoring and risk management	SVHC EDC / Repro 1B: BBP, DIBP, DNBP, DCHP, DnPeP, DnPeP, DEHP Anti-androgenic effects in the focus of the publication	Plasticizers and additives in a large variety of industrial processes and consumer articles as well as personal care products	DEP BBP DiBP DCHP DnPeP DEHP DiNP DiDP DnOP	Time course of phthalate cumulative risks to male developmental health over a 27-year period: Biomoni-toring samples of the German Environmental Specimen Bank P. Apel et al. (2020)
Time trend of NMP and NEP exposures	1991 - 2014	• Investigation of NMP and NEP in 24-h urine samples from 1991-2014 • In over 99% of the samples NMP metabolites could be detected, while NEP metabolites could be detected in 76% of the samples • NEP was often used to substititute for NMP following its SVHC identification in 2011 • No immediate effects of regulatory measures enacted in EU (NMP in 2009, NEP in 2013) could be observed More work is needed to elucidate the sources for past and current exposures.	NMP: SVHC Repro 1B (2009) NEP: Harmonized classification as Repro 1B Indications that substance is a PBT	Solvents in technical applications (production of polymers, electronics); Products with NMP and NEP content > 0,3% have to be labelled as cat 1B (inks, coatings)	NMP NEP	Metabolites of the alkyl pyrrolidone solvents NMP and NEP in 24-h urine samples of the German Environmental Specimen Bank from 1991 to 2014 N. Ulrich et al. (2018)
Time trend of dechloranes exposures	1995 - 2017	• Investigation of 4 dechloranes in blood plasma samples from 1995 – 2017 • Exposure levels of dechlorane 602 and 603 decreased over the years, while dechlorane plus exposure level remained constant. More knowledge on exposure sources is needed. • Data on exposure and toxicity of dechloranes are limited: further toxicological studies and monitoring has been proposed to characterize potential health impacts	Dechlorane plus: SVHC PBT (also a POP cancidate) Dechlorane 602: Suspected to be PBT and CMR Dechlorane 603: not classified	Flame retardants	De-chlora ne plus	Time trend of exposure to dechloranes: Plasma samples of German young adults from the environ-mental specimen bank collected from 1995 to 2017 H. Fromme et al. (2020)

1: Hierarchy of information sources: (Caveat: the regulatory status is subject to change and not all recent changes may have been included here)

1) SVHC properties as identified on the candidate list for authorization under REACH 2) Harmonized classification of properties of high concern 3) Indications of concern include: ongoing SEv, information by registrants in ECHA's database

2: The SIN List is a list of hazardous chemicals that are used in a wide variety of articles, products and manufacturing processes around the globe. The SIN abbreviation – Substitute It Now – implies that these chemicals should be removed as soon as possible as they pose a threat to human health and the environment. The SIN List is developed by the non-profit ChemSec in close collaboration with scientists and technical experts, as well as an advisory committee of leading environmental, health, consumer organisations. The list is based on credible, publicly available information from existing databases and scientific studies.