

The new SIN List substances

CHEMICALS SELECTED FOR THEIR ENDOCRINE DISRUPTIVE PROPERTIES

Bisphenol S (CAS 80-09-1)

This substance is used for the manufacture of plastics, as an anticorrosive and in thermal paper. It is a common substitute for Bisphenol A. Bisphenol S has been shown to be oestrogenic in in vitro studies. In vivo studies have shown impaired reproduction in zebrafish and uterine growth in rat.

It belongs to the group Bisphenols.

Bisphenol F (CAS 620-92-8)

This substance is used in epoxy resins and coatings. Bisphenol F has been shown to be oestrogenic in in vitro studies and there is also some evidence of antiandrogenicity. In vivo studies have shown uterine growth in rodents and altered weight of testes and Cowper's gland.

It belongs to the group Bisphenols

Di-n-octylphthalate, DnOP (CAS 117-84-0)

This substance is used as a plasticizer and dye carrier. In vitro studies show interference with thyroid function. In vivo reproductive and developmental effects have been seen in daphnia, fish and rodents. The substance has also been linked to endometriosis in humans.

Di-n-octylphthalate belongs to the group Phthalates.

Diisodecylphthalate, DiDP (CAS 68515-49-1, 26761-40-0)

This substance is used as a lubricant and in industrial coatings. Exposure to diisodecyl phthalate in vivo has led to disturbed reproduction and development in rodents, daphnia and fish. There is in vitro evidence of thyroidogenic activity and in vivo and in vitro evidence of oestrogenic action.

Diisodecylphthalate belongs to the group Phthalates.

Diundecyl phthalate, DuDP (CAS 3648-20-2)

This substance is used in polymer preparations and compounds, building materials and car interiors. In vivo studies in rodents have shown disruption of male sex organs, decreased sperm quality and decreased ano-genital distance, which is a marker of anti-androgenicity during development.

Diundecyl phthalate belongs to the group Phthalates.

Tribromophenol (CAS 118-79-6)

This substance is used in plastic production. In vitro studies have shown binding to a thyroid hormone transport protein. Animal

studies have shown the substance to alter the rate of development and increase abnormalities. In addition it interferes with the synthesis of oestrogen and thyroid hormones.

Tribromophenol belongs to the group Polyhalogenated aromatics.

Butylated hydroxytoluene (CAS 128-37-0)

This substance is used in pulp and paper products, coatings, inks, cosmetics, lubricants and fuel. In vivo studies of butylated hydroxytoluene has shown that the substance disrupts thyroid gland function and morphology. Reduced fertility, altered growth and development, impaired learning and motor behaviours have also been observed in vivo. In vitro studies further indicate interference with testis enzymes, steroid production, growth hormones and antiandrogenic activity.

Butylated hydroxytoluene belongs to the group Alkylphenols.

Ziram (CAS 137-30-4)

Ziram is an agent used in rubber and latex production. In vivo exposure to the substance has resulted in decreased fertility, sperm abnormalities and skeletal, muscular and nervous abnormalities in rodent offspring. In vivo and in vitro studies show negative thyroid effects. In addition a number of in vitro studies show negative effects on immune cells.

Ziram belongs to the group Thioaminocarbonyl compounds.

Carbon disulphide (CAS 75-15-0)

Carbon disulphide is used to manufacture polymers and cellulose and as a laboratory chemical. Human workers exposed to the chemical have shown dysfunctional sex behaviour, lowered sperm quality and alterations in testosterone levels. Animal studies show similar results including increased malformations in offspring and alterations in levels of dopamine and noradrenaline in the adrenal gland.

Carbon disulphide is one of the SIN List substances that does not match a particular group.

Triphenyl phosphate (CAS 115-86-6)

This substance is used in the formulation of plastics and rubber. Exposure through dust in humans has been associated with decreased sperm concentrations. Studies in fish show altered levels of oestradiol and testosterone, increased levels of vitellogenin and impaired reproduction.

Triphenyl phosphate is one of the SIN List substances that does not match a particular group.

CHEMICALS SELECTED FOR THEIR PERSISTENT, BIOACCUMULATIVE AND TOXIC PROPERTIES (PBT) OR VERY PERSISTENT AND VERY BIOACCUMULATIVE PROPERTIES (VPVB)

8:2 DiPAP (CAS 678-41-1)

This substance is used to greaseproof food contact paper. It has been detected in human blood samples and it is known to degrade into PFOA, which in turn is a PBT under REACH.

It belongs to the group Perfluorinated compounds.

Perfluoro-decane-sulfonic acid, PFDS (CAS 335-77-3)

This substance is structurally similar to the chemical PFOS, which is a recognised POP under the Stockholm convention. PFDS has been found in human plasma, in birds and fish. It is highly persistent and has the potential for long-range transport. It is expected to be at least as toxic and bioaccumulative as PFOS. It is thought to be used in fire fighting foams.

It belongs to the group Perfluorinated compounds.

Perfluorodecanoic acid, PFDA (CAS 335-76-2)

PFDA is used as a lubricant, wetting agent, plasticizer and corrosion inhibitor. It has been found in mammals, fish, bivalves and crustaceans. Both empirical and modelled data show PBT properties of this substance.

It belongs to the group Perfluorinated compounds.

Perfluorononanoic acid, PFNA (CAS 375-95-1)

This substance is used as a surfactant and it has been detected in human blood, in dolphins, seals and polar bears. Read-across with PFOA suggests it to be PBT, and the EU risk assessment committee recently agreed on classification as reprotoxic 1B among other hazardous properties.

It belongs to the group Perfluorinated compounds.

Perfluorohexanesulfonic acid, PFHxS (CAS 355-46-4)

This substance is used as a water- and stain-repellent coating for carpets, paper, and textiles. PFHxS is among the most commonly detected PFCs in the environment and in biota, and an increasing trend over time has been observed. The substance magnifies through the food chain bound to proteins, and also causes toxic effects through this. It is highly persistent.

It belongs to the group Perfluorinated compounds.

C8 SamPAP (CAS 2965-52-8)

This substance is used for surface treatment and as a levelling agent. It is known to degrade into the recognised POP PFOS. It has been detected in marine sediments and human blood.

It belongs to the group Perfluorinated compounds.

1,2-bis(2,4,6-tribromophenoxy)ethane, BTBPE (CAS 37853-59-1)

BTBPE is a flame retardant used in various types of polymers and textiles. It has been detected in environmental samples from various regions including in dolphins, arctic gulls as well as domestic cats and dogs. It has also been detected in humans. It shows persistent, bioaccumulative and toxic properties.

It belongs to the group Polyhalogenated aromatics.

Decabromodiphenyl ethane, DBDPE (CAS 84852-53-9)

This substance is used as a flame retardant. It has been detected in environmental samples from various parts of the world and in wildlife including birds, dolphins and pandas. It has also been detected in hair from humans, dogs and cats. Both experimental and estimated data suggests PBT properties.

It belongs to the group Polyhalogenated aromatics.

Tetrabromophthalic acid bis(2-ethylhexyl) ester, BEH-TEBP (CAS 26040-51-7)

This substance is a flame retardant, in polyurethane foam for example, and it is also used as a plasticizer. It has been detected in environmental samples from various regions and in human and wildlife samples. Both experimental and estimated data suggests it has PBT properties.

It belongs to the groups Polyhalogenated aromatics and Phthalates.

Tri-tert-butylphenol (CAS 732-26-3)

2,4,6-tri-tert-butylphenol is an antioxidant used as a fuel, oil, gasoline or lubricant additive. This substance shows both experimental and estimated P, B and T properties. It has been found in environmental samples including fish.

It belongs to the group Alkylphenols.

UV 328 (CAS 25973-55-1)

This substance is a UV absorber and stabilizer used in coatings, paints and plastics. It has been found in a variety of environmental samples and in different marine organisms. Estimated and experimental data suggests it has PBT properties.

It belongs to the group Alkylphenols.

Tris (1,3-dichloro-2-propyl) phosphate, TRIS (13674-87-8)

Tris is a flame retardant used in foam production, textiles and plastic. It has been detected in children who are exposed to the



chemical's presence in house dust. It is a suspected carcinogen. The substance shows experimental and estimated P and T properties.

It belongs to the group Electrophiles.

Dechlorane+ (13560-89-9)

This substance is a flame retardant and was introduced to replace Mirex, a recognised POP. It has been detected in environmental and human samples, and estimated and experimental data suggests P, B and T properties.

It belongs to the groups Polyhalogenated alkanes and Polyhalogenated alkenes.

CHEMICALS NEWLY CLASSIFIED AS BEING CARCINOGENIC, MUTAGENIC OR TOXIC TO REPRODUCTION (CMR)

Dioctyltin bis (2-ethylhexyl), DOTE, (15571-58-1)

This substance is used in the manufacture of plastics, including PVC. It is officially classified as being toxic to reproduction (Repr. 1B) and it may harm the unborn child (H360D). It was recently suggested for inclusion on the REACH Candidate List.

It belongs to the group Tin compounds.

N-ethyl-2-pyrrolidone, NEP, (CAS 2687-91-4)

This substance is used in inks, coatings, finishing, impregnation and more. It is officially classified as being toxic to reproduction (Repr. 1B).

It belongs to the group Aminocarbonyl compounds.

Tetrahydrofurfuryl alcohol, THFA, (CAS 97-99-4)

This substance is a solvent and plasticizer. It is officially classified as being toxic to reproduction (Repr. 1B).

This is one of the SIN List substances that does not match a particular group.

Ammonium pentadecafluorooctanoate, APFO, (CAS 3825-26-1)

APFO is the corresponding salt of PFOA, which has been on the SIN List since the beginning. It has now also received separate official classification as being toxic to reproduction (Repr. 1B). It is also on the Candidate List.

This substance belongs to the group Perfluorinated compounds.

SUBSTANCES IDENTIFIED AS SVHCS FOR THE CANDIDATE LIST, NOT PREVIOUSLY ON THE SIN LIST

1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear, DIHP, (CAS 68515-50-4)

DIHP is used as a lubricant in steering fluid and plasticizers.

This substance was included on the Candidate List in June 2014

for being toxic to reproduction. It is also in the process of being officially classified as toxic to reproduction (Repr. 1B).

This substance belongs to the group Phthalates.

- *In vivo* means that the experiment has been performed in a living, intact organism.
- *In vitro*, "in glass", means that the experiment has been performed without living organisms, using cell or tissue cultures for example.

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