

***Di(2-ethylhexyl)phthalate***

Di(2-ethylhexyl)phthalate (DEHP) is used primarily as a plasticizer. Exposure among individuals may vary considerably because of the broad nature of products into which DEHP is incorporated. In general, food will be the main exposure route.

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|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Guideline value            | 0.008 mg/l (8 µg/l)                                                                                                                                                                                                                       |
| Occurrence                 | Found in surface water, groundwater and drinking-water in concentrations of a few micrograms per litre; in polluted surface water and groundwater, concentrations of hundreds of micrograms per litre have been reported                  |
| TDI                        | 25 µg/kg body weight, based on a NOAEL of 2.5 mg/kg body weight per day for peroxisomal proliferation in the liver in rats, using an uncertainty factor of 100 for interspecies and intraspecies variation                                |
| Limit of detection         | 0.1 µg/l by GC-MS                                                                                                                                                                                                                         |
| Treatment performance      | No information found on removal from water                                                                                                                                                                                                |
| Guideline value derivation |                                                                                                                                                                                                                                           |
| • allocation to water      | 1% of TDI                                                                                                                                                                                                                                 |
| • weight                   | 60 kg adult                                                                                                                                                                                                                               |
| • consumption              | 2 litres/day                                                                                                                                                                                                                              |
| Additional comments        | The reliability of some data on environmental water samples is questionable because of secondary contamination during sampling and working-up procedures. Concentrations that exceed the solubility more than 10-fold have been reported. |
| Assessment date            | 1993                                                                                                                                                                                                                                      |
| Principal reference        | WHO (2003) <i>Di(2-ethylhexyl)phthalate in drinking-water</i>                                                                                                                                                                             |

In rats, DEHP is readily absorbed from the gastrointestinal tract. In primates (including humans), absorption after ingestion is lower. Species differences are also observed in the metabolic profile. Most species excrete primarily the conjugated mono-ester in urine. Rats, however, predominantly excrete terminal oxidation products. DEHP is widely distributed in the body, with highest levels in liver and adipose tissue, without showing significant accumulation. The acute oral toxicity is low. The most striking effect in short-term toxicity studies is the proliferation of hepatic peroxisomes, indicated by increased peroxisomal enzyme activity and histopathological changes. The available information suggests that primates, including humans, are far less sensitive to this effect than rodents. In long-term oral carcinogenicity studies, hepatocellular carcinomas were found in rats and mice. IARC has concluded that DEHP is possibly carcinogenic to humans (Group 2B). In 1988, JECFA evaluated DEHP and recommended that human exposure to this compound in food be reduced to the lowest level attainable. JECFA considered that this might be achieved by using alternative plasticizers or alternatives to plastic material containing DEHP. In a variety of in vitro and in vivo studies, DEHP and its metabolites have shown no evidence of genotoxicity, with the exception of induction of aneuploidy and cell transformation.