Prevention and treatment	The effectiveness of water treatment appears to be significantly different for different compounds. For example, conventional water treatment (coagulation, sedimentation, filtration) has been shown to be effective in removing TBT in shipyard waters under optimal conditions, whereas it was ineffective in removing DPT and TPT. In contrast, advanced treatment processes were effective in removing these compounds but ineffective in removing other organotin compounds. However, available data and quantification information are still limited. Where the organotins originate from plastic service water pipes and fittings, particularly monoalkyltins and dialkyltins in PVC and CPVC pipes and fittings, the most important means of control is by product specifications through an appropriate certification scheme.
Health-based value derivation	
• allocation to water	20% of TDI
• weight	60 kg adult
• consumption	2 litres/day
Assessment date	2020
Principal reference	WHO (2020) *Organotins in drinking-water*

DBT, dibutyltin; DMT, dimethyltin; DMTC, dimethyltin dichloride; DOT, di-n-octyltin; DPT, diphenyltin; MMT, monomethyltin; MPT, monophenyltin; TBT, tributyltin; TMT, trimethyltin; TPT, triphenyltin

* When a formal guideline value is not established, a "health-based value" may be determined in order to provide guidance to Member States when there is reason for local concern. Establishing a formal guideline value for such substances may encourage Member States to incorporate a value into their national standards when this may be unnecessary.

Reliable lifetime TDI values for monomethyltin, dimethyltin and dimethyltin dichloride could not be derived because of a lack of long-term studies with systematic experimental data. However, there is no need to establish a guideline value for these organotins because their use as stabilizers in PVC and CPVC is normally controlled by product specifications. The data available are insufficient to permit the proposal of guideline or health-based values for other organotins, including trimethyltin, tetrabutyltin, mono-n-octyltin, tetraocyltin, monophenyltin, diphenyltin and tetraphenyltin.

Parathion

Parathion (CAS No. 56-38-2) is a non-systemic insecticide that is used in many countries throughout the world. It is used as a fumigant and acaricide and as a pre-harvest soil and foliage treatment on a wide variety of crops, both outdoors and in greenhouses. Parathion released to the environment will adsorb strongly to the top layer of soil and is not likely to leach significantly. Parathion disappears from surface waters in about a week. The general population is not usually exposed to parathion from air or water. Parathion residues in food are the main source of exposure.

Reason for not establishing a guideline value	Occurs in drinking-water at concentrations well below those of health concern
Assessment date	2003
Principal references	FAO/WHO (1996) *Pesticide residues in food—1995 evaluations* WHO (2004) *Parathion in drinking-water*

Parathion inhibits cholinesterase activity in all species tested. There has been no evidence of carcinogenicity in 2-year rat studies. JMPR concluded that parathion is not genotoxic.

A health-based value of 10 µg/l can be calculated for parathion on the basis of an ADI of 0–0.004 mg/kg body weight based on a NOAEL of 0.4 mg/kg body weight per day in a 2-year study in rats for retinal atrophy and inhibition of brain acetylcholinesterase at the next higher dose, and using an uncertainty factor of 100 for interspecies and intraspecies variation. Lower NOAELs in experimental animals, based only on inhibition of erythrocyte or brain acetylcholinesterase, were not considered relevant because of the availability of a NOAEL for erythrocyte acetylcholinesterase inhibition in humans, which was 0.1 mg/kg body weight per day.

Intake of parathion from all sources is generally low and well below the upper limit of the ADI. As the health-based value is much higher than concentrations of parathion likely to be found in drinking-water, the presence of parathion in drinking-water under usual conditions is unlikely to represent a hazard to human health. For this reason, the establishment of a formal guideline value for parathion is not deemed necessary.

Pendimethalin

Pendimethalin (CAS No. 40487-42-1) is a pre-emergence herbicide that is fairly immobile and persistent in soil. It is used in large amounts in Japan (5000 tonnes per year). It is lost through photodegradation, biodegradation and volatilization. The leaching potential of pendimethalin appears to be very low, but little is known about its more polar degradation products.

Guideline value	0.02 mg/l (20 µg/l)
Occurrence	Rarely found in drinking-water in the limited studies available
TDI	5 µg/kg body weight, based on evidence of slight liver toxicity even at the lowest dose tested (5 mg/kg body weight) in a long-term rat feeding study, with an uncertainty factor of 1000 (100 for interspecies and intraspecies variation and 10 for a combination of the use of a LOAEL instead of a NOAEL and limitations of the database)
Limit of detection	0.01 µg/l by GC-MS
Treatment performance	1 µg/l should be achievable using GAC
Guideline value derivation	
• allocation to water	10% of TDI
• weight	60 kg adult
• consumption	2 litres/day
Assessment date	1993
Principal reference	WHO (2003) *Pendimethalin in drinking-water*

In a short-term dietary study in rats, a variety of indications of hepatotoxicity as well as increased kidney weights in males were observed at the highest dose level. In a long-term dietary study, some toxic effects (hyperglycaemia in the mouse and hepatotoxicity in the rat) were present even at the lowest dose level. On the basis of