

Science Project: Environmental Risk Evaluation Report: Dodecamethylcyclohexasiloxane Summary

The Environment Agency and collaborators have evaluated environmental risk for dodecamethylcyclohexasiloxane, also known as D6. Under our chemical prioritisation system, D6 is one of a group of related cyclic siloxanes identified as a high priority for the evaluation of risks to the environment.

The evaluation follows closely the methods outlined in the European Union (EU) Technical Guidance Document (TGD) for the risk assessment of new and existing chemicals. The producers and users of D6 provided some of the information used in the report, and their helpful assistance is formally acknowledged. The evaluation has also been through a national and international peer review process.

The main uses of D6 are as an intermediate in the production of other chemicals (silicone polymers) and as a component in some personal care products (such as cosmetic products and skin- and hair-care products). Use as an intermediate to make silicone polymers effectively consumes the D6, although trace amounts still remain in the final products and can subsequently be released to the environment during polymer use. D6 in personal care products results in widespread environment exposure.

The persistent, bioaccumulative and toxic (PBT) status of D6 is assessed using the available measured and calculated data. The overall conclusion is that D6 does not meet the criteria for a PBT or a very persistent and very bioaccumulative substance.

Standard models are applied to the information available to assess the risks from the normal use of D6 to water, sediments, soil, and predators. The property data set is not complete for this purpose, but in some areas further information could be valuable. This assessment therefore makes recommendations about the significance of the data gaps and/or data uncertainties, and suggests where further research should be focussed.

Estimates of potential emissions to the environment from the key life-cycle stages are based on industry research, Emission Scenario Documents, and (in the absence of any other information) worst-case default assumptions. Using the available information, risk characterisation ratios could only be generated for predators and top predators. No risk characterisation ratios above one, which indicate an unacceptable risk for the environment, are identified for any of the scenarios considered. However, it is not currently possible to fully assess the risks to freshwater sediment, soil, and marine sediment because suitable toxicity data are not available. An assessment for humans exposed via the environment concludes that D6 is unlikely to pose a risk to human health.

The main findings of the risk evaluation are summarised as:

- No risks are identified from the life-cycle stages considered.
- Although it is not possible to assess fully the risks to soil, the screening assessment carried out indicates that the risks are likely to be low for all life-cycle stages considered and so further work to address this data gap is not a priority at present.
- In addition, although it is not currently possible to assess fully the risks to predators through the consumption of earthworms, the available evidence suggests that exposure via this route does not lead to a risk. Therefore further work to address this data gap is not considered a priority at present.

- It is not currently possible to assess the risks to the sediment (both freshwater and marine) because suitable toxicity data are not available. To address this data gap further long-term toxicity testing using spiked sediment is needed for the sediment-dwelling organisms: *Chironomus riparius* (or similar), *Lumbriculus variegatus* (or similar), and *Hyalella azteca*.

Any future sediment toxicity testing should take account of the recommendation in the TGD that such tests be carried out without supplemental feeding.

Industry is currently undertaking a voluntary test program to address some of the uncertainties in this assessment.

This Summary relates to information from the following science project:

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