# VERMONT DEPARTMENT OF HEALTH

### 4-Tert-Octylphenol

(4-(1,1,3,3-tetramethylbutyl) phenol)

 $C_{14}H_{22}O$ 

$$H_3C$$
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 
 $CH_3$ 

#### **Summary of Health Effects**

4-tert-octylphenol can affect the reproductive system of animals and affect how babies develop. It can also affect how hormones are produced in animals.

#### How is 4-tert-octylphenol used?

4-tert-octylphenol is used to make surfactants used in detergents, industrial cleaners, and emulsifiers.<sup>1</sup>

#### **Toxicity: What are its health effects?**

High doses of several alkylphenols, including 4-tert-octylphenol, have altered estrogenic effects, including sex hormone levels, estrus cycles, reproductive outcomes, neonatal sexual development, as well as impaired production of steroid hormone and testicular atrophy.<sup>1</sup>

4-tert-octylphenol is classified as a category 1 endocrine disruptor.<sup>2</sup> 4-tert-octylphenol is listed in the Danish Ministry for the Environment's List

of Undesirable Substances as having endocrinedisrupting effects.<sup>3</sup>

## Exposure: How can a person come in contact with it?

A person can come in contact with 4-tertoctylphenol by breathing contaminated air, eating contaminated food and drinking contaminated water, or from skin contact with consumer products.<sup>1</sup>

4-tert-octylphenol was detected in plastics through the Dutch Inspectorate screening of plastic toys for chemical composition and hazards report.<sup>4</sup>

The 2014 National Health and Nutrition Examination Survey (NHANES) data show that urinary levels of 4-tert-octylphenol were detectable in a small percentile of the U.S. population, and detection in the urine reflects recent exposure.<sup>5</sup>

#### References

1. Centers for Disease Control and Prevention (2013). *National Biomonitoring Program, biomonitoring summary 4-tert-octylphenol*. Retrieved from <a href="https://www.cdc.gov/biomonitoring/OctylphenolBiomonitoringSummary.html">www.cdc.gov/biomonitoring/OctylphenolBiomonitoringSummary.html</a>

- 2. Danish Ministry of the Environment, Danish Environmental Protection Agency. *The EU list of potential endocrine disruptors*. Retrieved November 9, 2018, from eng.mst.dk/chemicals/chemicals-in-products/endocrine-disruptors/the-eu-list-of-potential-endocrine-disruptors/
  - Parish Ministra of the Ferinance Device Ferinance and Device Productive Association (2004). Use of a device by
- 3. Danish Ministry of the Environment, Danish Environmental Protection Agency (2004). *List of undesirable substances* (Environmental Review No.15) Retrieved from <a href="https://www2.mst.dk/Udgiv/publications/2004/87-7614-477-1/pdf/87-7614-479-8.pdf">www2.mst.dk/Udgiv/publications/2004/87-7614-477-1/pdf/87-7614-479-8.pdf</a>
- 4. Dutch Inspectorate for Health Protection and Veterinary Public Health (VWA/KvW) (2005). *Screening of plastic toys for chemical composition and hazards* (Report ND05o610/01).
- 5. Centers for Disease Control and Prevention (2014). Fourth report on human exposure to environmental chemicals, updated tables, (August, 2014). Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved from <a href="https://www.cdc.gov/exposurereport/">www.cdc.gov/exposurereport/</a>