

Control Nonylphenol Ethoxylates at the Source

2007 NACWA Pretreatment & Pollution Prevention Workshop

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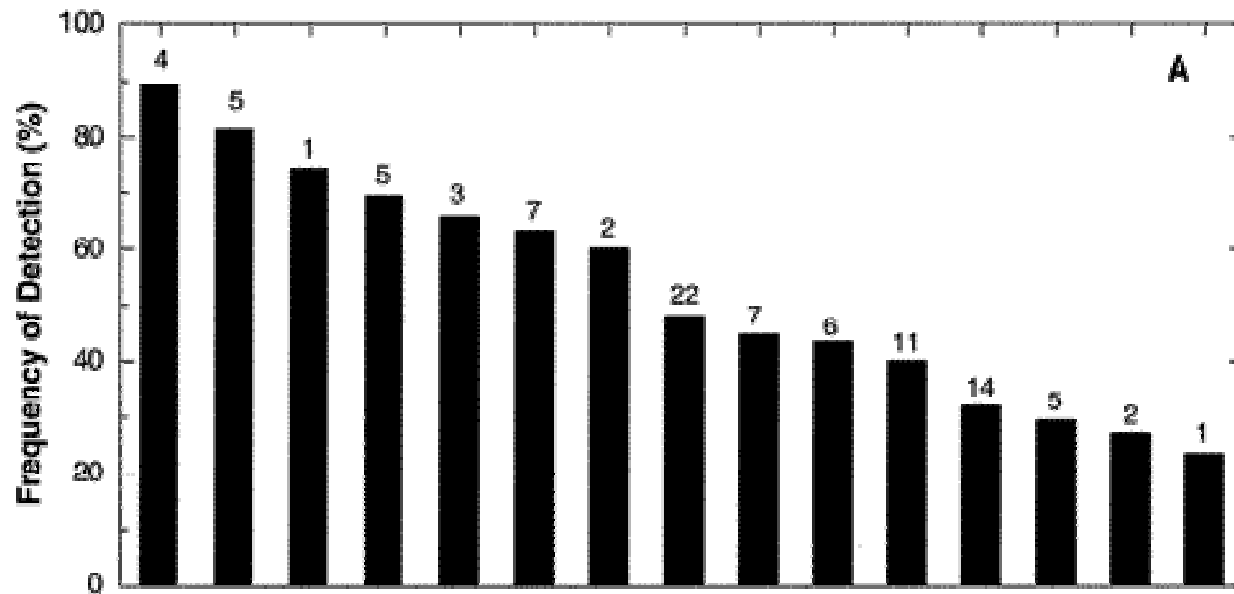
What are Nonylphenol Ethoxylates... and why should we care?

- Non-ionic surfactant mostly used in laundry detergents and cleaners
- More than 400 million pounds of NPE products produced in U.S. per year
- Incompletely removed by wastewater treatment plants
- Widely found in ambient water
- Toxic, disrupt the endocrine system at very low levels

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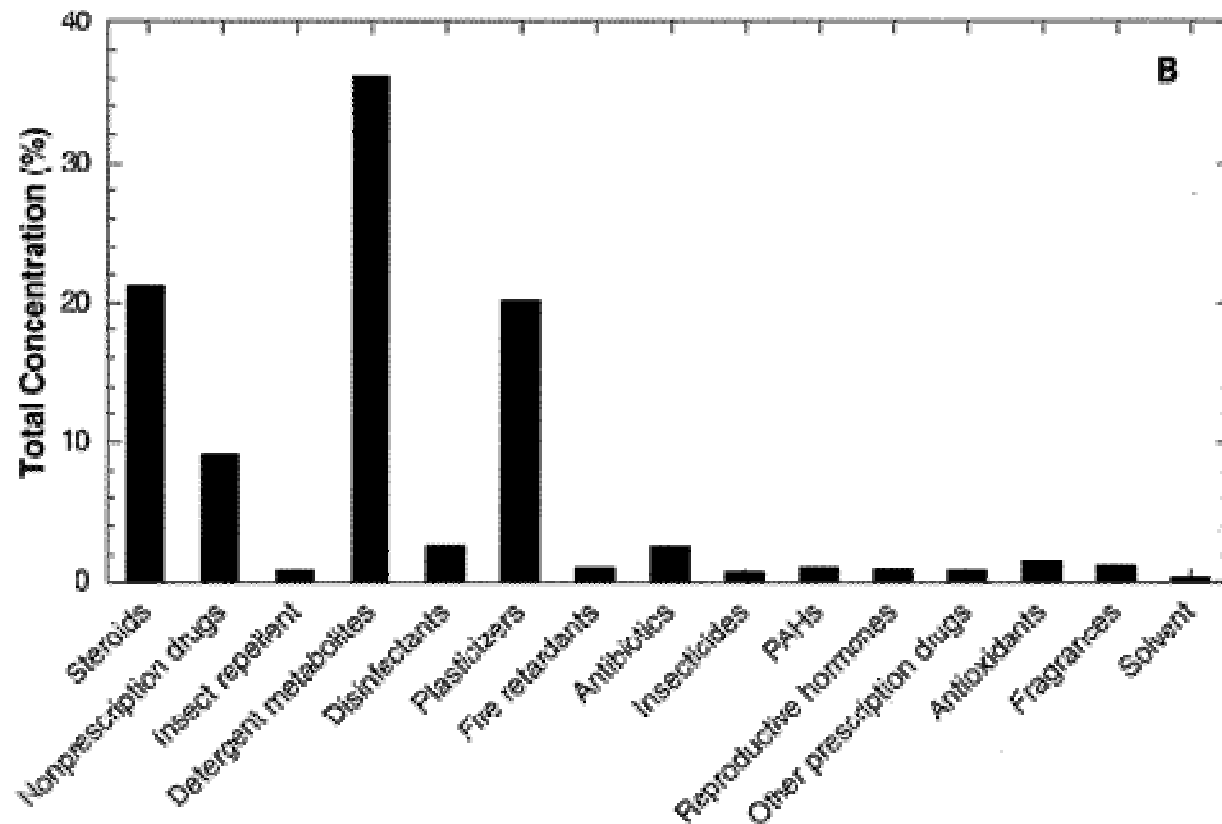
Incompletely removed by wastewater treatment plants

- Wastewater treatment decreases the concentration of NPEs that enter the environment but increases the concentrations of the NPE metabolites.
- At least 63% of the total mass of all NP compounds entering wastewater treatment plants is released into the environment. -- *Environment Canada, 2002*
- WEF found that activated sludge plants can remove between 90 and 95% primary compounds. -- *Melcer, et al., 2006*



Widely found in ambient water

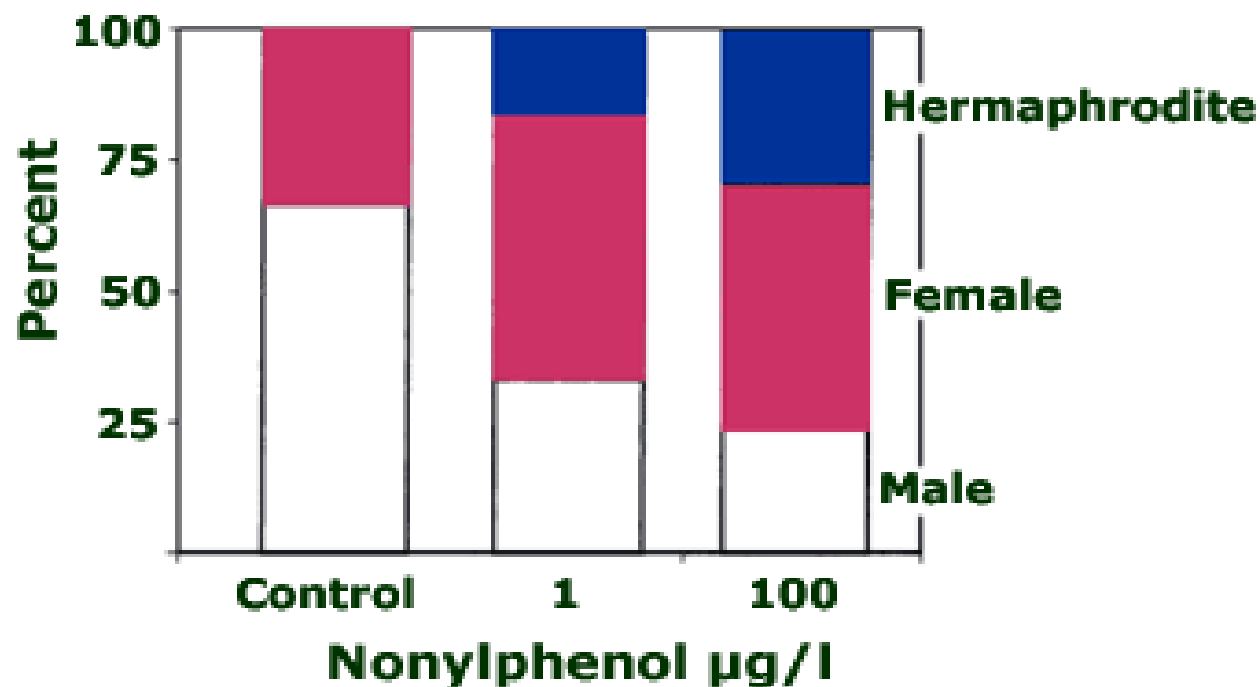
United States Geological Survey (USGS) tested 139 streams for organic wastewater contaminants, including three NPE metabolites and OPE metabolites. These metabolites were detected in 85 streams, or 61% of tested streams.



Frequency of detection of organic wastewater contaminants by general use category, and percent of total measured concentration of organic wastewater contaminants by general use category. Number of compounds in each category shown above bar. -- USGS, 2002

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Disrupt the endocrine system at low levels



Percentage of Oysters Developing into Males, Females and Hermaphrodites after Single Exposure to NP (in ppb) -- *Nice, et al.*

Government restrictions and private sector initiatives

Government restrictions:

- European Union: no more than .1% by mass of NPE in most products
- Canada: water quality criteria of 1 ppb for NPE and metabolites
- US EPA water quality criteria for nonylphenol: 6.6 ppb, not accounting for metabolites

Private sector initiatives:

- Large companies, including Procter & Gamble, Unilever, have expressed concerns about NPEs and do not use NPEs in high-volume products.
- In 2006 Wal-Mart named NPEs as one of three priority chemicals and asked suppliers to find safer alternatives.
- US EPA voluntary initiative (Safer Detergents Stewardship Initiative) to recognize companies which eliminate, or pledge to eliminate.

Safer alternative to NPEs

Alcohol ethoxylates:

- Less persistent
- Less toxic
- Do not disrupt the endocrine system

Petition to EPA

Sierra Club, Environmental Law and Policy Center, Pacific Coast Federation of Fishermen's Associations, UNITE HERE, Physicians for Social Responsibility, Washington Toxics Coalition Petitioned EPA in June, 2007, under Toxic Substances Control Act (TSCA) for:

- More testing
- Epidemiological study on laundry workers
- Labeling
- Ban on NPEs in detergents

Petition Denied

- TSCA has a very high threshold for action:
“unreasonable risk to health or the environment”
- EPA generally denied the petition but plans to issue an Advance Notice for Proposed Rulemaking to take comments on whether some of the testing data requested should be required.
- Litigation

Conclusion

- Manufacturers should not put the burden of removing dangerous chemicals in consumer products, pharmaceuticals and personal care products on wastewater treatment plant operators.
- U.S. chemical safety laws need to be modernized to require health and environmental testing of chemicals before they are put into commerce.

References

Environment Canada. 2002. Canadian Environmental Quality Guidelines for Nonylphenol and its Ethoxylates (Water, Sediment, and Soil). Scientific Supporting Document. Ecosystem Health: Science-based Solutions Report No. 1-3. National Guidelines and Standards Office, Environmental Quality Branch, Environment Canada, Ottawa.

Melcer, Henryk, et al., The Removal of Alkylphenol Ethoxylate Surfactants in Activated Sludge Plants, presentation at the Water Environment Federation Technical Exhibition and Conference, October 24, 2006.

Nice, H., D. Morritt, M. Crane and M. Thorndyke. 2003. Long-term and Transgenerational Effects of Nonylphenol Exposure At a Key stage in the Development of *Crassostrea gigas*. Possible Endocrine Disruption? Marine Ecology Progress Series, Vol. 256, p. 293. Retrieved from <http://www.ourstolenfuture.org/NewScience/wildlife/inverts/2003/2003-0717niceetal.htm> in 5/2005.

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