

*IASH 2007, the 10th International Conference on
Stability, Handling and Use of Liquid Fuels
Tucson, Arizona
October 5-11, 2007*

**UPDATE ON THE ENVIRONMENTAL FATE AND ECOTOXICOLOGY OF THE
ISOTHIAZOLONE BIOCIDES**

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The environmental characteristics of industrial biocides are of great concern and constantly being evaluated due to increasing regulatory pressure to be current on environmental exposure, handling and disposal issues. All this information is provided in the Material Safety Data Sheets (MSDS) supplied to and available to the customer. Since the initial report in 2003 there have been some changes to the hazard summary, hazard class in the shipping and handling section and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) information with regards to Isothiazolone biocides. Isothiazolone biocides are broad spectrum antimicrobials used in a variety of industrial applications. This presentation will focus on changes made to the hazard summary, shipping and handling hazard class and the CERCLA information in the MSDS.

Biocides are employed to control or eradicate microbial growth in numerous applications. The ideal biocide shows good efficacy in a broad spectrum of activities and should be stable in the formulated end product. In addition the ideal biocide should have the following environmental characteristics.

- Rapid degradation in the environment.
- Rapid partitioning in the environment resulting in limited bioavailability to non-target organisms.
- Minimal toxicity to non-target organisms at concentrations present in the environment.
- Minimal bioaccumulation of toxicologically significant compounds.

With the ever changing regulations biocide assessments for the above characteristics must be performed to ensure compliance and confirm original data. These studies determine the risk assessment as a function of both the exposure and the hazard. The exposure, which is a measure of the concentration of the biocide in the environment, is affected primarily by degradation and partitioning. The hazard represents the toxicity of the biocide to non-target organisms. Low risk is obtained when the environmental concentration of the biocide (exposure) is less than the toxic threshold. These characteristics determine the hazard class, hazard summary, shipping and handling procedures and disposal requirements. This information is compiled in the MSDS and provided to the customers.

Isothiazolone biocides are effective at low concentrations, therefore provides low employee and environmental exposure when used and disposed of as directed in the MSDS.

Keywords: Hazard Class, DOT, IMO, IMDG, CERCLA, SARA, MSDS