EPA's SPECIATE 4.4 Database: Bridging Data Sources and Data Users

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SPECIATE is the U.S. Environmental Protection Agency's repository of profile data for chemical species of air pollutants emitted by specific source categories. EPA released SPECIATE Version 4.4 in February 2014. This ACCESS database includes 5,728 Particulate Matter (PM), Volatile Organic Gases, Total Organic Gases, and Other Gases profiles. 2,346 chemical species are included. Data come from many sources, including peer-reviewed journal articles and emissions testing. SPECIATE provides an important intersection of emission profile data development and its use. Some uses of source profiles include: (1) creating speciated emissions inventories for regional haze, PM, greenhouse gas, and photochemical air quality modeling; (2) estimating hazardous and toxic air pollutant emissions from PM and organic gas emissions; (3) providing input to chemical mass balance receptor models; and (4) providing a repository of compounds searchable by source category and pollutant. For example, SPECIATE 4.4 added profiles to support two key EPA objectives – the Tier III rulemaking and the release of the MOVES 2013 model – by making associated profiles more accessible and increasing the transparency of the rulemaking process. SPECIATE emission profiles also underpin the newest data set used to develop EPA's National Emission Inventory (NEI) and the 2011-based air quality modeling platform. In particular, SPECIATE is being used to better characterize Pulp & Paper emissions. This paper describes the SPECIATE 4.4 database, provides specific examples of sources of data and the use of SPECIATE emission profiles in emissions inventories, and makes recommendations for future improvements in the SPECIATE database.

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