

OPPT Proposed Draft Charge to External Peer Reviewers for the review of the TSCA Workplan Chemical Risk Assessment of ATO

December 2012

This assessment evaluated the environmental risks that may be associated with ATO use as a synergist in halogenated flame retardants. Human health risks were determined to be of low concern; the available hazard data are summarized in an appendix.

Issue 1. Overall Clarity of the Assessment. Chapter 1 provides the scope of the assessment and a brief introduction. Supporting information on chemistry, fate, and uses are provided in Chapter 2 and the exposure, hazard, and risk characterizations are presented in Chapter 3. Additional supporting information is available in the appendices.

Question 1-1. Please comment on the clarity and strengths and weaknesses of the risk assessment and provide specific suggestions regarding how this may be improved.

Issue 2. Characterization of Environmental Exposures Based on Release Data. During project scoping, OPPT identified ATO use as a synergist in halogenated flame retardants as the focus of this assessment. EPA's 2010 Toxic Release Inventory (TRI) was used to obtain information on water releases associated with this end-use scenario. Data collection was refined using the North American Industry Classification System (NAICS) codes to identify a subset of TRI facilities (*i.e.*, those indicating production, processing or use of ATO-containing flame retardants). Because ATO is not specifically listed on the TRI, data reported under the broader category of 'antimony compounds' were used as a surrogate for ATO in this assessment. ATO surface water concentrations were predicted using a screening level tool (E-FAST2), to model water releases reported by selected TRI facilities.

Question 2-1: TRI information reported for 'antimony compounds' was used to estimate ATO releases associated with its use as a synergist in halogenated flame retardants. Please comment on this approach.

Question 2-2: Because TRI does not indicate the number of days associated with reported releases, two exposure scenarios were developed (assuming the total water releases reported in the 2010 TRI occurred over a period of 250 days or, a more conservative scenario of 24 days to provide a range of predicted water concentrations for comparison with hazard benchmarks (concentrations of concern) identified for aquatic organisms. Please comment on the assumptions used to develop modeling scenarios using EPA's E-FAST2 model to assess aquatic exposures to ATO.

Question 2-3: Please comment on the approach EPA used to estimate environmental releases resulting from uses of ATO as a synergist in flame-retardant chemicals. Are there other data sources or approaches that EPA should consider to estimate environmental releases of ATO in this end-use? If so, please provide citations or data for consideration in further revision of the draft assessment.

Issue 3. Characterization of Environmental Exposures Based on Monitoring Data. OPPT used environmental monitoring information obtained from the U.S. Geological Survey-National Water Information System and EPA's STORET database to evaluate antimony levels in environmental media. Data collection was limited to states (n=10) with TRI facilities (n=14) having NAICS codes corresponding to ATO uses as a synergist in halogenated flame retardants.

Question 3-1: Please comment on the use of these large monitoring data sets to characterize ecological exposures to ATO use as a synergist in flame retardants and their representativeness for other locations in the US.

Question 3-2: Are there other major sources of environmental monitoring data (or other pertinent information) that EPA should incorporate in the exposure assessment? If so, please provide the necessary citations and/or data for inclusion in the revised document.

Question 3-3: Are there concerns or limitations in these data sets that may impact their utility for risk assessment?

Issue 4. Fate, Transport and Bioavailability. Information available in the published literature regarding the chemistry, fate and transport of ATO is used qualitatively to assess bioavailability to ecological organisms. There is a lack of site-specific data on geochemistry that would inform specification and availability antimony compounds in its toxic forms for environmental receptors.

Question 4-1: Please comment on the use of this information in the ATO assessment. Are there other data sources that EPA should consider?

Issue 5. Environmental Hazard Assessment. The available hazard information was critically evaluated based on specific test guidelines, accepted endpoints used to assess ecotoxicity, and the amount of detail provided in each study report. Hazard benchmarks (*i.e.*, concentrations of concern) were subsequently derived using the most robust ecotoxicity studies and conservative ecotoxicity values identified in the published literature. Acceptable toxicity data were not available for ATO for both chronic and acute exposures in all media. For this reason, toxicity data for antimony trichloride is used to characterize hazards to water, soil, and sediment dwelling organisms. This is not expected to significantly impact the findings of this assessment because (1) upon dissolution, antimony compounds release antimony ions, and it is the fate and toxicity associated with the total antimony ion concentration that is of most importance when assessing the toxicity of antimony in environmental media and (2) both the oxide and chloride salts of antimony produce comparable amounts of antimony ions upon dissolution in water.

Question 5-1: What other factors should EPA consider in evaluating the potential risks of concern for ecological organisms from antimony species? Please comment on the use of toxicity data for antimony trichloride to characterize hazards to water, soil, and sediment dwelling organisms.

Issue 6. Environmental Risk Characterization. The ATO assessment evaluates risks of concern posed to ecological organisms as a result of ATO use as a synergist in halogenated flame retardants. Generally speaking, risks are indicated when antimony levels in environmental media (as indicated by environmental monitoring and industrial release information) exceed the hazard benchmarks (*i.e.*, concentrations of concern) identified for ecological organisms in water, soil and sediment. This approach resulted in very few instances where the concern concentrations for water or sediment dwelling organisms were exceeded (< 1%). No exceedances of the hazard benchmarks for soil dwelling organisms were identified. The uncertainties/limitations of this approach are discussed in the ATO document.

Question 6-1: Please comment on the implicit assumption that antimony concentrations measured in environmental media reflect many different inputs (*i.e.*, from various end use applications and other types of antimony compounds in addition to ATO) and how this could impact the risk estimation.

Question 6-2: The findings reported in this assessment hinge on the assumption that a ‘conservative’ scenario has been presented (based on the assumption that all releases of various types of antimony compounds have been attributed to ATO use in flame retardants) and as such, reflect a conservative estimate of risk of exposure to ATO. Please comment on validity of this assumption and the likelihood that the actual risks of concern posed to ecological organisms have been over (or under) estimated.

Question 6-3: Please comment on the data set used to evaluate exposures to soil-dwelling organisms and the limitations and/or uncertainties in estimating risk to soil-dwelling organisms. Please provide comment on additional data sources, surrogate/related chemicals, or approaches to estimate risks under data poor conditions?