



The 2005 National-Scale Air Toxics Assessment (2005 NATA) Prescribed and Wildland Fire Implications Whitepaper



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Key Finding: Serious questions are raised about the accuracy and completeness of wildland fire emissions reported in the 2005 NEI and utilized in the 2005 NATA. The results of the 2005 NATA are questionable in terms of those pollutants emitted by wildland fire and the associated risks to public health.

About the National-Scale Air Toxics Assessment (NATA): Scheduled every three years, the National-Scale Air Toxics Assessment (NATA) is an analytic tool that helps users identify geographic regions, pollutants and emission sources that should be evaluated to gain a better understanding of the potential health risks (cancer, neurological and respiratory) from breathing pollutants called air toxics. The 2005 NATA is based on the 2005 National Emissions Inventory (NEI). Since the NEI plays such an important role in the development of the NATA, the US Environmental Protection Agency (EPA) has expended much time and effort into compiling the inventory from all pollutant sources across the United States. These efforts are ongoing in that EPA compiles an emissions inventory every three years and works to improve each subsequent dataset. Because of improvements and changes to its emissions inventory and methodology, EPA has stated it is not meaningful to directly compare the results of the 2005 NATA to the NATA results from previous years.

Basically, risks described in the NATA are calculated in two steps: first, an emissions inventory of air toxics is assembled from the NEI, and that data is formatted for models used in the NATA; second, using that modified inventory as the main input to mathematical models, concentrations of various air toxics across the United States are estimated. In this second step, certain emissions may be dropped from the NATA (see below).

Wildland Fires and Toxic Air Pollutants: Wildland fires emit toxic pollutants such as formaldehyde, benzene, acrolein and acetaldehyde, in addition to criteria pollutants such as fine particulate matter (PM_{2.5}) and carbon monoxide. Earlier NATA versions included emissions from both prescribed and wildfires in assessing the public health risks from toxic air pollutants. *However, even though wildfire and prescribed fire emissions were included in the 2005 NEI, as a refinement to the 2005 NATA, wildfire emissions were excluded from the public health risk assessment, and will not be included in future assessments.*

- Ted Palma of EPA's Air Toxics Assessment Group stated that EPA toxicologists felt that events such as wildfires are more episodic than chronic, and therefore wildfire emissions were removed from the assessment. Emissions from prescribed fires are still included in the 2005 NATA, and also will be included in all future assessments. The rationale for this is that prescribed fire events can occur on a more frequent basis than wildfires in the same or similar location (T. Palma, personal communication, 4/26/11).

Issues and Questions About Wildland Fire Emissions Inventory: Based on a review of the emissions inventory used in the first step of compiling the 2005 NATA, EPA reported that air toxics emissions declined by approximately 7% across all sectors from levels reported in the 2002 NEI. However, in the same comparison, inventoried wildland fire emissions (includes both prescribed fires and wildfires) showed a 9% increase over that same time period. This increase in wildland fire emissions reflects a significant reduction in reported prescribed fire emissions and a much greater increase in wildfire emissions. As noted above, the wildfire emissions were excluded during the second step of formulating the 2005 NATA.

- Only five states (California, Minnesota, Ohio, West Virginia and Wyoming) reported prescribed fire emissions in 2005 (A. Pope, personal communication, 4/26/11). Thus, the 2005 NEI reports an approximate 94% reduction in emissions from prescribed fires from 2002 levels; over that same time period, reported wildfire emissions increased by approximately 98%. As wildfire emissions are no longer included in the NATA modeling, this large increase did not impact the risk assessment calculations.
- According to Marc Houyoux with EPA (personal communication to Melanie Pitrolo of the USDA Forest Service on July 14, July 22, July 27 and July 29, 2011), the wildland fire emissions used in the 2005 NATA were "at least misclassified" and "not the best available".

Future NATA Work: The 2008 NATA will be based on the 2008 NEI; however, the 2008 NEI is not yet finalized and no timeline has been publicly announced for the 2008 NATA. Efforts are currently underway by EPA to recalculate, reconcile and improve the fire emissions data used in the first version of the 2008 NEI. These efforts are expected to improve the accuracy and completeness of the emissions information and resulting air toxics assessment.

Acknowledgements: Melanie Pitrolo (USFS) primary author.

Contact: Pete Lahm, SmoC Chair, US Forest Service // 202-205-1084 // plahm@fs.fed.us, pete.lahm@gmail.com
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