

**Statement of Deborah Shprentz  
Consultant to the American Lung Association  
on EPA's  
Second Draft Integrated Science Assessment for Nitrogen Dioxide**

**June 2, 2015**

Thank you for the opportunity to present comments on the second draft Integrated Science Assessment (ISA) for Nitrogen Dioxide on behalf of the American Lung Association.

With this second draft ISA, EPA has delivered on repeated requests by CASAC to produce an assessment document that is integrated across disciplines.

The organization of the ISA into chapters on short- and long-term exposures and effects allows information from controlled human exposure studies, epidemiology, and toxicology to be evaluated in a consistent and transparent manner. Each of these methods has strengths and weaknesses as brought out in the document. Considered together, they provide powerful evidence of the adverse effects of nitrogen dioxide (NO<sub>2</sub>) air pollution on public health.

This second draft provides objective criteria for the selection and evaluation of studies and lays out the rationale for reaching stronger conclusions about causality since the last review based on the integrated review of the evidence.

The American Lung Association concurs with the conclusion that short-term exposures to nitrogen dioxide cause adverse respiratory effects. This conclusion is appropriate based on the evidence laid out in the draft document.

We are particularly concerned about the impact of brief exposures to NO<sub>2</sub> on people with asthma, as the evidence clearly indicates NO<sub>2</sub> can induce airway hyper-responsiveness and inflammation that are indicative of asthma exacerbations.

The 2015 meta-analysis by Brown<sup>1</sup> found that 70 percent of the individuals with asthma exposed to NO<sub>2</sub> at rest experienced increases in airway responsiveness following 30-minute exposures of 200 to 300 ppb, and 60-minute exposures of 100 ppb, the level of the current 1-hour standard.

Short-term increases in NO<sub>2</sub> also increase the risk of emergency department visits and hospital admissions in people with asthma, at exposures well below the current 1-hour standard of 100 ppb. These studies are robust to the inclusion of other air pollutants.

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<sup>1</sup> Brown JS. Nitrogen dioxide exposure and airway responsiveness in individuals with asthma. *Inhal Toxicol* 2015; 27 (1): 1-14

It is important to note that a causal determination is not needed in order to regulate. The Clean Air Act is premised on the notion that EPA must set standards to protect public health despite uncertainties, and that the agency must err on the side of increased protection.

The World Health Organization recently completed a technical review of recent scientific evidence on the health effects of various air pollutants. The review was conducted by 29 international experts, reviewed by 32 external reviewers as well as an interdisciplinary advisory committee.<sup>2</sup> With respect to NO<sub>2</sub>, the technical report concluded that:

“The results of these new [epidemiology] studies provide support for updating the current WHO air quality guidelines for NO<sub>2</sub>, to give: (a) an epidemiologically based short-term guideline; and (b) an annual average guideline based on the newly accumulated evidence from outdoor studies. In both instances, this could result in lower guideline values.”

This conclusion is pertinent to the review of the NAAQS. The U.S. hourly standards for NO<sub>2</sub> are roughly equivalent to the WHO guideline values, while the U.S. annual average standards are well above the international guidelines.

We would also like to commend the CASAC for its thorough review of the first draft ISA for nitrogen dioxide. In our many years of following the NAAQS review process, we have not seen such a detailed, substantive set of comments as those.

The second draft ISA incorporates many of the suggestions made by CASAC reviewers.

However, there is an important recommendation by a committee member that has gone unheeded.

We endorse the suggestion that the ISA identify industry-funded studies. The major scientific journals now require authors to disclose their funding sources, and this information is noted in published studies. Inclusion of this information in the ISA would improve the transparency of the document.

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<sup>2</sup> World Health Organization Regional Office for Europe. Review of evidence on health aspects of air pollution – REVIHAAP Project. Technical Report. World Health Organization, 2013.