QUESTIONS FOR THE RECORD
Submitted by
Chairman Broun and Chairman Schweikert
to
Mr. Michael P. Walls
Vice President, Regulatory and Technical Affairs, American Chemistry Council

1. Many other federal agencies—including the National Institutes of Health, Occupational Safety and Health Administration, Centers for Disease Control and Prevention, and other parts of the Environmental Protection Agency (EPA)—also conduct chemical risk assessments. Could the NRC's 2014 report's recommendations be applied to all federal chemical risk assessment programs, and should they? Further, could the recommendations in Chapter 7 of the NRC's 2011 formaldehyde report be applied to all federal chemical risk assessment programs, and should they?

    A. Other similar federal chemical hazard and risk assessment programs can and should apply the National Academy of Sciences (NAS) recommendations reflected in the 2011 and 2014 studies. All of the individual NAS recommendations, however, may not be relevant to every chemical risk assessment program or even to specific risk assessments. Some assessment programs, for example, may initially conduct fairly rapid, screening level assessments that purposely rely on default conservative assumptions to determine whether estimated risks fall below a health concern.

    If the screening evaluation indicates a potential for concern, then the knowledge gained in the screening evaluation can then be used to identify the determinants that need to be evaluated with more precision in a refined assessment to enable risks at environmentally relevant exposures to be characterized with a greater degree of certainty. In this example, the NAS recommendations would most aptly apply to the refined assessments. The specifics of a governmental assessment program, its approach, and its goals will be factors in determining the relevance of the individual NAS recommendations.

2. To what extent does having multiple toxicity assessment sources for the same chemical present challenges for ensuring consistent risk management across the nation, and what steps should EPA take to either minimize or explain reasons for any differences?

    A. The real challenge for risk management is the development of Integrated Risk Information System (IRIS) assessments that provide overly conservative point estimates to be applied in all situations. In ACC's view, the IRIS program should provide a range of plausible risk estimates that reflects scientific reality, clearly explains uncertainties and limitations, and is useful for multiple risk management scenarios.

    A recommendation made in the 2014 NAS report directs the IRIS program to stop developing only upper bound (or high end) estimates of reference doses (RfDs)

and cancer potency slopes (CPS) and, instead, include central estimates. Central estimates are more indicative of the average or center of a distribution. A recent study has shown that when central estimates of exposures are used, the risk estimates are almost 30 times lower than those based on high end values.[1] For Superfund site remediation, for example, the authors of that study concluded that over 40 percent of sites would be viewed as being in the discretionary cleanup range. If EPA used central estimates of RfDs and CPS along with central estimates of exposures, the calculated risks would be even lower. EPA should hold IRIS to the standard of producing the most scientifically accurate and objective risk information achievable.

Multiple toxicity assessments may create challenges for some risk managers. In most risk management scenarios, it would be useful to have assessments that provide alternatives to an IRIS value. ACC has suggested that IRIS assessments include a section that describes why an IRIS value may differ from values provided by other programs or earlier IRIS assessments.

The best use of government resources would ensure that the multiple assessment programs that exist are well coordinated and efficiently use their resources to develop scientifically robust assessments. In ACC's view, two necessary steps for improving assessments are: (a) using pre-defined criteria to judge the strength and quality of all relevant information and (b) integrating the information in a manner that takes into account the quality of the evidence, considers the strengths and limitations of the evidence, and transparently explains how the various types of evidence fit together. In addition, all federal programs should use up-to-date knowledge of mode of action in lieu of default assumptions and should focus on evaluating hazards and risks at exposure levels relevant to the health of Americans and the U.S. environment.

3. Which IRIS assessments should EPA address as soon as possible, and why?

A. The IRIS program should be assessing chemicals for which there are significant uses and potential exposures within U.S. non-occupational populations. Because IRIS assessments take significant time and resources to develop and complete, the program should focus on those chemicals for which there are robust scientific databases and complex scientific questions that require the integration of data from multiple evidence streams. The IRIS program should provide clearly articulated rationales for assessing these substances.

The last time EPA solicited public input on chemical nominations for IRIS was October 18, 2010, when the Agency was preparing the 2011 IRIS agenda. EPA never formally released the results of that solicitation and Agency review process, and they have not released an updated IRIS agenda. EPA does place some information on its

[1]JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT 34, 187-206 (1997). ARTICLE NO. EE971012 http://law.vanderbilt.edu/files/archive/183_Conservative_versus_Mean_Risk.pdf .

web-based tool, IRISTrack, but ACC understands that the tracking tool has been in the process of an overhaul for over a year. Notably, IRISTrack does not provide information on the rationale for adding or removing chemicals to/from the IRIS agenda. The IRIS program should engage stakeholders in a dialogue to determine and set IRIS priorities.

4. As you know, Dr. Ken Olden at EPA has implemented a standing set of bi-monthly meetings to address chemical specific scientific issues as well as to have discussions about problem formulation. At the most recent June meeting, it appeared that many NGOs boycotted the meeting due to concerns they said were related to not knowing about the meetings and concerns regarding too much industry representation. It is our understanding that these meetings have all been announced on the IRIS webpage, registration is open to everyone, and anyone who wishes to speak can get a slot on the agenda. Do you support the NGOs' call for a boycott?

    A. No. ACC does not support boycotts of scientific discussions that are open to any stakeholder that wishes to participate. The dates for the IRIS bi-monthly meetings are announced in the Federal Register, EPA updates the dates on the IRIS webpage, and, as noted in the question, the meetings are open to all who wish to participate. Dr. Olden's approach to engage stakeholders early in scientific discussions should help to improve the scientific rigor of the assessments and also help IRIS complete assessments more quickly by identifying and addressing potential issues earlier in the process.

5. In its report, the NRC recommends that EPA should provide technical assistance to stakeholders who don't have resources to provide input. Do you have any concerns about such a practice?

    A. Technical assistance provided by EPA can benefit many diverse stakeholder groups. EPA should provide information on any technical assistance it provides to stakeholders and should make the information available to all stakeholders using Federal Register notifications and public EPA dockets. Where such technical assistance covers areas of scientific debate, EPA should provide information on alternative interpretations, methodologies, or data, as appropriate.

6. The NRC recently completed its review of the National Toxicology Program's (NTP) listing of formaldehyde in the 12th Report on Carcinogens. In its report, the panel concurred with the NTP's listing of formaldehyde as "known to be a human carcinogen," and it also found "clear and convincing" evidence of "an association between formaldehyde exposure and myeloid leukemia." This is a very different conclusion than the one found by the NRC panel in 2011 which did not find a causal link between formaldehyde exposure and leukemia. What impact could these seemingly conflicting reports have on stakeholders and the public?

    A. We find it concerning that the 2014 NRC Committee's review of the formaldehyde

listing in the 12th Report on Carcinogens (RoC) is quite different than the 2011 NRC Committee's review of the EPA draft IRIS assessment for formaldehyde. The 2011 NRC Committee did not simply review and comment on EPA's methodology, but it also made substantive comments regarding the following:

- The limitations and inconsistencies of the epidemiological data, calling it "inconsistent" and "highly variable" (NRC 2011, at p. 111)
- The "paucity of formaldehyde-induced LHP cancers in animal models" (NRC 2011, at p. 110)
- The fact that there is "little known about a potential mode of action" (NRC 2011, at p. 7)

Notably, the 2011 NRC Committee made these substantive conclusions after reviewing a formaldehyde database similar to the one that the NTP reviewed for the 12th RoC. The significant divergence between the two NRC Committees' interpretations of the science raises further questions instead of answering them. It also reinforces the need for a comprehensive and fully integrated analysis of formaldehyde. Unfortunately, the 2014 NRC Committee was not charged to undertake a fully integrated analysis in its review of the 12th RoC formaldehyde listing.

The 2014 NRC Committee review of the formaldehyde listing in the 12th RoC must be viewed in context—it was a narrow review that focused solely on applying the NTP listing criteria. The NTP listing criteria lack the rigor necessary to support a credible hazard assessment, as they do not take into account the totality of the evidence nor do they integrate all studies when making a hazard determination. Separate NRC Committee reports on formaldehyde and the IRIS program published in 2011 and 2014, respectively, recommend these measures. This NRC Committee did not consider negative studies and inconsistent findings across studies and within individual studies, as they were not considered relevant to informing the listing. This consideration, or lack thereof, is particularly troubling given formaldehyde's rich and extensive scientific database, which requires a fully integrated review.

Moreover, the 12th RoC is a hazard assessment and, therefore, does not assess potential risks from typical exposures to potential carcinogens. It does not consider real world exposures to assess human health risks. Formaldehyde has been reviewed at the federal level, and its use is subject to regulation in consumer products and in the workplace to control exposures and to ensure public health. The scientific literature is clear that there is no increased health risk from low-level exposures normally found in home or work environments.

Ultimately, the 2011 and 2014 NRC Committee reports on the formaldehyde IRIS assessment and the larger IRIS program should inform how future hazard and risk assessments for formaldehyde and other chemicals are conducted. As EPA finalizes its revised IRIS assessment, we urge EPA to refer to these reports to ensure their analysis considers all of the available data, as well as its strengths and weaknesses, and is more integrated than the one provided in the formaldehyde listing in the 12th RoC.