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## The Real Trouble with Risk Assessment

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## The Real Trouble with Risk Assessment

In their article, “Pesticide regulation amid the influence of industry,” Boone and colleagues (2014) contend that a major weakness of the US Environmental Protection Agency’s pesticide risk assessment is the use of industry-supplied data, which has inherent conflicts of interest. Therefore, studies performed by industry scientists or funded by industry sources are considered by the authors to be inherently biased and therefore not to be trusted, the implication being that publications by academic scientists or those funded by nonindustry sources are bias free and, therefore, by definition, suitable for use in risk assessment. However, the funding source is only one indicator of study quality, and there is no guarantee that studies funded by nonindustry sources are free of bias. The use of internationally accepted test guidelines and stringent standards of documentation and performance should go a long way toward avoiding the potential conflicts of interest with which the authors are concerned. Likewise, the use of consistent rubrics to rate the quality of potentially relevant studies for use in risk assessment seems a sensible course of action, particularly when the rubrics are based on widely recognized elements of good experimental design, such as replication, randomization of treatments, the use of proper controls, and other experimental details that increase confidence in test results. The authors

seem to be missing the real problems with risk assessment, which are that most of the standard tests required for effects assessments are not measuring things that we care about and that the outputs of risk assessments are too far removed from what we want to protect (Forbes and Calow 2013). I agree with the authors that there is a need for more ecological relevance in our approaches to risk assessment, and I have advocated for the use of ecological models to help bridge the gap between standard test endpoints and environmental protection goals. I have learned that, in addition to sound science, it is essential to get buy-in from all of the key stakeholder groups on criteria for model acceptance and the role of such models in the overall assessment process. Significant progress on this front has been made in Europe (EFSA 2014), and the recent National Research Council Report (NRC 2013) provides an important opportunity for the United States to substantially improve the ecological relevance of risk assessment approaches.

Risk assessment of pesticides in the United States is at a critical juncture, particularly with regard to assessments of risks to threatened and endangered species. There is no question that there are many challenges ahead and that there is significant room for improvement in our risk assessment methodology. We all share the benefits and costs of using pesticides and the vast number of other chemicals on which society depends. Scientists from academia, govern-

ment, and industry all have an important role to play in this process. We need to acknowledge that we come to the table with different perspectives and that only by working together across sectors and with sound science as our foundation are we going to improve the process of risk assessment.

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