

Evaluating Progress in Pesticide Risk Reduction:

Report of the OECD Project on Pesticide Aquatic Risk Indicators

Introduction by the OECD Working Group on Pesticides

This report presents the results of an OECD project on pesticide aquatic risk indicators, carried out from 1998 to 2001. In the first phase of the project, an expert group developed, tested and evaluated three indicators for tracking aggregate aquatic risk resulting from agricultural pesticide use. In the second phase OECD countries tested and evaluated the indicators developed by the expert group as well as indicators developed in member countries.

The purpose of the project was to determine whether it is possible to design pesticide risk indicators that are scientifically robust yet easy to understand, and that could be used by OECD governments to evaluate progress in risk reduction. The project focused on indicators of aquatic risk as a logical starting point, with work on indicators of terrestrial and human health risk expected to follow.

The project was conceived and carried out by the OECD Working Group on Pesticides, a body composed primarily of pesticide regulatory officials from the 30 OECD member countries¹. The project was also intended to contribute to the work on agri-environmental indicators undertaken by the OECD Joint Working Party on Agriculture and Environment.

The indicators evaluated in the project were designed to track aquatic risk trends over time by combining information on the quantity of individual pesticides applied annually to agricultural crops; the hazard, or toxicity, of the pesticides to aquatic organisms; and estimated exposure. Information on pesticide use is not always available in OECD countries but can be estimated from pesticide sales. Information on toxicity is generally available in pesticide registration files maintained by OECD governments. Exposure is calculated based on various standard scenarios that are built into the indicators.

In addition to exploring the development of robust yet simple indicators, the project provided an opportunity for OECD governments to analyse and compare different indicators, to acquire hands-on experience in using them, to understand their possibilities and limitations, and to evaluate their utility.

Summary Conclusions

The project concluded that it is possible to develop pesticide risk indicators that are easy to understand yet scientifically robust, and that could be used by OECD governments to evaluate progress in risk reduction.

¹ The OECD countries are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. Representatives of the European Commission and other international organisations, and of environmental non-governmental organisations and the pesticide industry, also participate in Working Group meetings and projects.

However, the project also found that aggregated indicators by nature and design are crude tools, and that they provide only relative measures of risk trends and not exact measures of real risks.

The project demonstrated that simpler and more complex indicators showed the same general trends in aquatic risk when used at a highly aggregated level, because they are largely driven by the same variables. The project thus concluded that simple indicators requiring relatively little data may be adequate for tracking pesticide risk trends at the national level. More complex indicators are on the other hand needed for more narrowly focused investigations.

The project concluded that pesticide risk indicators do not come in “one size fits all” but need to be customised by governments to fit their purpose and their judgement about the appropriate weighting of risk parameters. Further, the project concluded that it would be hard to find a valid way to use pesticide risk indicators to compare countries because of the changing ways that governments understand and analyse risk and because of the absence of complete and comparable data.

The project identified several important limitations of pesticide risk indicators, most notably that:

- they require data that are often incomplete or inconsistent;
- they are difficult to validate, because the possibilities and means to measure real-life risk on a large scale are limited;
- while the trends they produce may be robust in showing the direction of risk, the numerical values of the indices that make up the trends are essentially meaningless, driven by the choice of data used and reflecting unitless sums of numbers derived from the scores assigned to each use and exposure factor.

Despite these limitations, the project concluded that pesticide risk indicators could be useful to OECD governments because:

- they permit aggregation of risk trends across pesticides, crops and regions, giving insights not available from the case-by-case risk assessments of pesticides done for registration;
- they show graphically the effect on risk of the ever-changing mix of agricultural pesticides and pest-management practices;
- they can help to identify the crops, regions and pesticides that contribute most to aggregate risk;
- they may encourage governments to improve their databases on pesticide use, hazard and exposure.

The project therefore concluded that more work is needed to explore ways to present indicator results, so that they will be clearly and accurately understood.

Lessons Learned

The project showed that:

- designing pesticide risk indicators is a difficult task requiring many decisions and compromises;
- missing data is a major obstacle to using pesticide risk indicators. The largest data gaps are for pesticide use, but data on long-term toxicity and exposure are also less complete and consistent than might be expected;
- it remains difficult to interpret the results of indicators;
- experimenting with pesticide risk indicators in a collaborative international project is useful and informative. It saves resources by dividing the labour and can produce richer results than if governments work alone.

Project Reports

A summary report of the project follows this introduction. In addition, two detailed reports are available:

The *Report of the OECD Pesticide Aquatic Risk Indicators Expert Group (Paris, 2000)* presents the first phase of the project, in which three indicators were designed and tested. The rationale and specifications for the three indicators are provided.

The *Technical Report of the OECD Pilot Project on Pesticide Aquatic Risk Indicators* presents the second phase of the project, compiling the reports written by six governments that experimented with the three indicators and, in some cases, with additional indicators developed nationally.

The project also produced a user-friendly computer program to hold the required pesticide data and run the three indicators, and an accompanying user guide. Once the data have been entered, the program makes it easy to produce graphs showing risk trends calculated by the three indicators.