



FEDERAL PROVINCIAL TERRITORIAL COMMITTEE
 on PEST MANAGEMENT AND PESTICIDES
PESTICIDE RISK INDICATOR WORKSHOP
 October 23, 2003
 Fredericton, New Brunswick

AGENDA

	Presenter	Topic
8:30	Michel Letendre (MAPAQ)	Opening remarks of the Chair
8:40-9:00	Jacques Drolet, PMRA	Risk indicator types / characteristics / levels of complexity Pesticide indicators vs. IPM adoption types of indicator
Agriculture and Agri-Food Canada - Risk Indicator Research		
9:00-9:20	Annemieke Farenhorst, University of MB	AAFC Agro-Environmental indicators - Water quality risk indicator
9:20-9:50	Jean-Pierre Privé, AAFC Atlantic Food and Horticulture Research Centre	Evaluation of a new pesticide risk indicator model for apple production
Pause		
Practical experiences with risk indicators		
10:15-10:30	Jim Chaput, OMAF	Experience with the Environmental Impact Quotient model
10:30-11:00	Michel Letendre and Raymond-Marie Duchesne, MAPAQ	Quebec's "Stratégie Phytosanitaire" and the establishment of a Pesticide Database to support a pest management decision tool for agricultural producers
11:00-11:30	Monique Paré, PMRA	Case studies for the evaluation of risk indicator models
Status of pesticide risk indicator work across Canada		
11:30-12:00	Monique Paré, PMRA	Results of the National survey on risk indicator-related provincial activities and interest/expectations
Lunch Break		
OPEN DISCUSSION		
1:30-3:30	Facilitator: Janice Hopkins, PMRA	FRAMEWORK (for the discussion) TOPICS: - clear understanding of needs and purposes for a pesticide RI - criteria for choosing an indicator model - direction / advice to the PRI working group
3:30-4:00	Janice Hopkins, PMRA / Michel Letendre, Chair	Wrap-up and next steps / Closing remarks

FPT PESTICIDE RISK INDICATOR WORKSHOP DISCUSSION - DRAFT REPORT

SUMMARY OF DISCUSSIONS

A brief overview of the progression from the concepts of pesticide use reduction to pesticide risk reduction and the concurrent efforts to measure the progress in this respect was presented to the workshop participants by the Chair (Michel Letendre, Quebec). The need for collaboration in developing an assessment tool that will allow pesticide risk comparisons at different jurisdictional levels was the main factor in bringing the FPT Pesticide Risk Indicator Working Group together. The working group also offers a forum for members to gain and share knowledge about risk indicators. The goal of the workshop discussion was to capture the different Canadian needs for a pesticide risk indicator (PRI) and to develop recommendations to the PRI Working Group for further actions.

The group was unanimous on the usefulness of a PRI. The many purposes identified correspond to needs at the provincial level (decision support tool/stewardship tool; support for permit system/licensing/categorization) and at the federal-provincial levels (program evaluation; measurement of risk reduction; communication tool; establishment of priorities). Even though the history of PRI work in Canada is limited, provincial and federal representatives shared their experiences with the group of participants.

Most PRI criteria on the list developed by the working group (WG) were considered important. Discussions, especially about criterion 6 that details all the risk aspects to be taken into account by the model, revolved primarily around human health impacts, chronic effects, and availability of good data. Regarding the many sectors of pesticide use, it was agreed that agriculture and forestry should be given priority for the introduction of PRI use. Other large scale pesticide uses such as treatments against public health pests, turf and lawn care, and industrial applications were also viewed as sectors with significant pesticide use, therefore good candidates for eventually applying the PRI concept as well. This consideration of different sectors acted as a reminder to ensure that the PRI model will be adaptable to deal with the different scenarios of pesticide use found in sectors other than agriculture and forestry.

The structure of the PRI model was briefly discussed mostly with respect to the capability of separating the different environmental components within the model.

Workshop participants indicated that initial support from the developers/authors of a PRI would be required to assist them in using the indicator. Potential users of the PRI expressed their interest for some help in accessing complete and up-to-date pesticide information preferably from a central source. It will be also important for users to understand the output information and how to interpret it according to the context in which the PRI model was used.

Workshop participants emphasized the need for flexibility in whatever PRI model the WG chooses to recommend. The WG was also urged to maintain its awareness of OECD work in the field of PRI's to benefit from the work being done at the international level as well.

DETAILS OF THE DISCUSSION ON PESTICIDE RISK INDICATORS

1- DO YOU SEE A NEED FOR A PESTICIDE RISK INDICATOR?

- ▶ Positive response from everyone - but need may be at various degrees
- ▶ Several ways in which a PRI would be useful were stated and these statements are combined with answers for question two

2- WHAT IS THAT NEED? WHAT IS YOUR PURPOSE?

PRI as a decision support tool and a tool for stewardship at the product level (Provinces)

- ▶ Agricultural producers/users - more informed decision
- ▶ Obtain relative measure of risk and consider alternative options
- ▶ Selection of farm pesticides within a program
- ▶ To develop recommendations to users / professionals
- ▶ Industrial users with a pest management plan - help guide their choice of IPM / RR tools.

PRI for program evaluation (General need)

- ▶ Program evaluation both in the context of subsidies and provincial regulation
- ▶ Subsidy decisions - assess risk level of subsidized insecticide/herbicide use in widespread pest outbreaks, e.g., a noxious weed program
- ▶ For industrial uses, assist in the development of pest management plans

PRI for measuring Risk Reduction (General need)

- ▶ Measurement of success of pesticide risk reduction strategy
- ▶ Identify what needs to be changed in a strategy; it will help orientate the strategy toward better success (positive and negative feedback loops)
- ▶ Connect with causality of interventions/actions - to act in the right spot, to increase efficiency
- ▶ Measure and demonstrate results of RR strategies and meet accountability requirements; (both PMRA and AAFC will be required to measure progress)
- ▶ As a response to public pressure to diminish risk. PRI is a better way to move from pesticide quantity reduction (artificial measurement) to a better definition and measurement of risk reduction.
- ▶ If we have a national tool, we might have more success and more reliability (public trust)
- ▶ It was proposed that PRI information could lighten the weight of extensive monitoring currently done in some provinces (expensive, using critical resources). In this case, use of a PRI model would replace most of the monitoring activities, except for monitoring data that would be used to validate or ameliorate the PRI model

PRI as support for permit system/ determining conditions of sale / licensing of pesticide products (Provincial need)

- ▶ Use PRI for determining permit differentiation
- ▶ Backup issuance of use permit regulation - assist in developing rationale for approving permits for certain pesticides vs. all that are registered
- ▶ Developing lists of products (classification / certification)
- ▶ Developing a list of products exempt from provincial regulation

Specific sectors where PRI are particularly needed (General need)

- ▶ Agriculture - even where acreage is low and pest influence minimal, some products are old and of

concern

- ▶ Forestry - needs similar, or even greater than agriculture in some regions.
- ▶ More discussion on this subject under question four

PRI as a Communication tool (General need)

- ▶ Can help communication with some public groups
- ▶ A national PRI will help report to public and to governments in terms of pesticide use [risk] reduction
- ▶ PRI must express what is important to Canadians, e.g., water quality does not have the same meaning in different countries
- ▶ Use for comparison with other jurisdictions growing same commodities (assumption we can compare with similar tools) [more a wish than a need]
- ▶ Level of comparisons: Canada, North America, international ? (Need to know which RI selected)
- ▶ Caution for using PRI to make comparisons and to use for trade / marketing:
 - elements that influence pesticide use are region dependant (even when efforts made to decrease the risk)
 - comparison should be in relation to efforts made / consider what is important in an area
 - comparison may be good if harmonization is done as much as possible but must consider the particularities of each jurisdiction
 - comparison between countries could have economic differences and destroy positive results

PRI to help establish priorities (General need)

- ▶ Priorities for research
- ▶ Prioritization of Minor Use needs (proposal to link the two prioritization activities)
- ▶ Identify data gaps / knowledge required

Other comments

- ▶ Different indicators can be used for growers and professionals and for policy and program evaluation, and to evaluate retroactively and guide future action.
- ▶ For AAFC, a PRI is a small piece of the “agricultural” puzzle (out of 24) - indicators may also be used at level of trade/ international [agro-environmental indicators]

What PRI will not be used for :

- ▶ Not as a tool for registration decisions
- ▶ Not a trade marketing tool
- ▶ Will not replace all other decision-making tools but complement

3- WHAT EXPERIENCE DO YOU HAVE IN USING A PESTICIDE RISK INDICATOR?

PEI

- ▶ RI for fish based on all applications down to streams, and with rainbow trout as most sensitive
- ▶ Feedback / comments received indicated that many people were equally concerned about human toxicity and other non-targets, and more information was wanted.
- ▶ Moreover there was a need for a pesticide risk reduction program (risk not measured in terms of pesticide kg, but with a finer risk evaluation that takes into account some basic characteristics of an active ingredient).

BC

- ▶ Tried the red/yellow/green system [EIQ], and another academically developed scheme (MSc initiative)
- ▶ Neither were satisfactory; there were concerns with a number of anomalies in each system and with the cost for running the processes

QC

- ▶ Quantities of pesticides per commodity have been done in QC, but considered too crude a measure now.
- ▶ Sales records are used, and a pressure indicator is calculated (total kg/ha)
- ▶ Looking at assessment of trends over time.

AAFC

- ▶ Pesticide use data is important but have found that climate and soil composition/variability should be taken into consideration: the same [pesticide] amount/acre can present different risks based on these factors.
- ▶ For comparing different regions, a PRI model should include components of climate and soil

4- WHICH OF THE PROPOSED CRITERIA ARE ESSENTIAL TO YOU?

- ▶ All criteria were considered important.
- ▶ All criteria are important to meet different objectives/goals/needs [according to model users]
- ▶ (From discussion on weighing model components) the order in which criteria are listed does not necessarily reflect their importance.
- ▶ Importance of criteria 1-3, 6 and 9 was stressed.
- ▶ Elements of Criteria 1, 6, 7, 9, and 10 were specifically mentioned and discussed, as follows.

Criterion 1

The model selected should be simple, easy to use, credible and based on a rational approach.

- ▶ It is key to the implementation of a PRI.
- ▶ This criteria states that the model should be simple - does that imply “not scientific” / No, it implies that the input data is available.
- ▶ PRI cannot be limited to academia / it should be easy-to-use at least
- ▶ While the underlying model might be complicated, the PRI should be readily explained at a general level but still be robust and scientifically sound

Criterion 6

The model should take into consideration toxicity information on the pesticide; the effects and risks of its presence in water (groundwater and surface water) and soil; the effects and risks from the pesticide on human health, on aquatic, avian, and terrestrial organisms including non-target insects; the effects and risks of atmospheric transportation; and other environmental and health impacts according to the provincial and national priorities, with a possibility to adjust the relative weight of each model component.

- ▶ Discussions stemming from criterion 6 explored the subject of health risk indicators, especially in terms of chronic risk.
- ▶ Discussion on reference to effects on and risks to human health / other health impacts
 - Human health is already addressed through the registration process in a much more complex fashion

- Human health [impact]: uneasy about two parts regarding health (occupational / general population exposure),
- Ability to adjust the weight of each component: What does weight mean here?
- Occupational exposure is very important
- OECD does not look at overall exposure [health impact]
- ▶ Chronic effects:
 - data lacking
 - attribution issues
- ▶ Data on chronic effects (e.g. cancer risks):
 - singling out active ingredients for their contribution to risk is not feasible at this time with the data currently available in pesticide science.
 - not enough studies or contradictory studies
 - (referring to re-evaluation), even for them it is difficult to evaluate because of conflicting information
 - database from which information [human health impact] is obtained: when was it last updated?
 Products with old evaluations vs. newly assessed products - should we give same considerations? comparative advantage to new database?
 - concern that PRI cannot capture risks like chronic toxicity
- ▶ Should chronic toxicity aspect be put aside for the time being, given we need to consider how to weigh different effects/different populations to reflect our views and priorities (rather than do it on a solely mechanistic basis)?
 - Environmental risks are complex too and they ask for value input too. There is no difference perceived between health and environment, neither on complexity nor on value selection. We should not overlook chronic effects in determining safety values.
 - Norway PRI gives extra weight to chronic health effects identified (it multiplies the score by 5, based on Europe system of risk phrases)
 - Concerning a health indicator, QC indicated they have chronic data to work with.
 - Consultation with other professionals like health officials could help establish any weight factors used for different health impacts. Noone is a health expert in our group (QC experts [and maybe others] would be interested in contributing)
- ▶ To summarize concerns about the chronic area:
 - members wish to see it included
 - we want to make progress (6-18 months)
 - there is a need to include views of others (e.g., health departments/experts)

Criterion 9

The model should help to measure the risk reduction efforts made under provincial and national strategies aimed at reducing risks associated with pesticide use in different sectors (agriculture, urban, forestry, etc.)

- ▶ It is very important, i.e. the model needs to reflect risk reduction actions. We need to check / look at outcomes
- ▶ Some effects [outcomes - health risks] are very hard to measure, e.g. birth defects, but can measure exposure
- ▶ For acute toxicity - poisoning statistics could be used to verify
- ▶ Other source: detections in food (Canada) / food residue
- ▶ Incidence - adverse effects reporting (new PCPA) should be looked at over time
- ▶ Need to verify measures - Human measures (sperm, breast milk)

- ▶ If we are looking at pesticides in sperm / breast milk, this is not necessarily chronic effects, but a measure of exposure. It may or may not be possible to establish potential linkage [exposure/effects]
- ▶ Model development should be done only once we have validated
- ▶ Even if you have data re: chronic concerns, how do you weigh the different importance of each chronic effects?

Criterion 10

The model should help in orienting users towards lower risk pesticides to protect human health and the environment in the context of sustainable agriculture.

- ▶ Important in helping growers in choice of products (i.e. a way of comparing strategies): growers are at the base of the chain for RR, and PRI can influence growers
- ▶ PRI can also help in assessing development (research)
- ▶ PRI can apply not only to users but to crop protection industry too / producers of pesticides as well.

Criterion 7

The model should allow the use of data and information available at the National, Provincial, Sector (Structural, Domestic, Forest, Agriculture...) and Farm level to facilitate use of the model at different levels (provincial, national, single farm...).

- ▶ Interesting because it considers single farm as well as national level - measurement of progress in RR at both levels
- ▶ Useful for structural and domestic products also

Sectors

- ▶ Do we need forestry, structural, domestic and industrial?
- ▶ What about domestic? [PRI] would have to be changed.
- ▶ Public health? Urban spraying? Structural / Does industrial include municipal, e.g. West Nile sprays, aerial urban, e.g. gypsy moth
- ▶ Focus should be on agriculture and forestry
- ▶ Lawn care (plus turf) could be a start in domestic sector
- ▶ Lawn pesticides (green spaces, golf courses) are close to agricultural use, with possibly certain adjustments
- ▶ Support for concentrating on agriculture first because that is where the risk is the most (80% of products used are in agriculture - QC)
- ▶ Even if we prioritize agricultural sector, it should be kept in mind that the PRI model should be as versatile as possible in view of future adaptation to domestic sector
- ▶ Lawn care and mosquito control are two different approaches / could be lawn care products only
- ▶ Domestic use is very different and consequently problematic to assess
- ▶ Large scale industrial programs should be included with agriculture, e.g. pipelines, railways, oil-pumping facility
- ▶ Add golf courses / large scale recreational facilities
- ▶ Most urban spraying target larvae. Do we address biocontrol factors? Yes, all pesticides including biopesticides
- ▶ Domestic sector not included [in PRI work] for the moment.
- ▶ Caution about trying to do too much / Start modestly
- ▶ More a question of considering the eventual suitability of a model for sectors to be included at a later date

Model components

- ▶ With the model: important to be able to separate health and environmental components - and some of the components within environment
- ▶ Accuracy, availability of data (e.g. re health and environmental effects) [Criteria 4]
- ▶ AAFC - NAHARP water quality RI - are there components that can be separated? Will it look at human exposure vs. non-human?
- ▶ Water quality indicator focuses on % [pesticide] loss/movement from agricultural fields, not effect on aquatic or other species (no plan to link to toxicity) - [may lead to] identifying certain pesticides as a risk when they may not be in fact
- ▶ Differentiating impact on non-target species: desirable criteria?? how sure are we that impacts occur (re: public concerns)
- ▶ INDIGO model does separate components
- ▶ What do we consider in environment? only water? or organisms? - several organisms are included (NRI model). But NRI does not consider impact on parasitoid/predators.
- ▶ INDIGO looks at beneficials and water
- ▶ Is there a need to know the inside of environment?
- ▶ Yes non-target are important
- ▶ Considering species, it is difficult to consider because of half life population impact. Within the NAHARP we did assess because decided that we would not go there if not enough data
- ▶ There is a difference between end-point in the environment and acute tox on beneficials
- ▶ QC has included bees in their database but not the other non-target insects. We cannot integrate all in a model.
- ▶ Some information on other organisms, impacts are not so well documented - suggest that this type of information be applied in IPM type of program [rather than in a PRI]

Other suggestions/comments related to criteria

- ▶ Importance on what is communicated, including to the public
- ▶ It should be mentioned in the criteria that we are not developing/creating a new model but assessing some already existing models
- ▶ PRI are meant to add another element to sales data / These elements become complementary
- ▶ PRI can be improved / weight adjusted
- ▶ QC sees three types of indicators: pressure, state (follow up on contamination, food quality (residue), and response
- ▶ QC would not follow / implement pesticide use data. They are looking at better using [sales?] data.

Summary:

- ▶ All criteria are important
- ▶ Discussion should help WG to expand description and discuss needs

5- WHAT SUPPORT DO YOU REQUIRE TO USE AN INDICATOR?

- ▶ If a model from Europe is adopted:
 - analysis/ assessment of applicability of assumptions to Canadian context, including species chosen
- ▶ If Canada develops a model:

- support from developers of the model
- if valuable, to seek assistance/collaboration from jurisdictions who have chosen/used the model - would there be support from them [developers?] to us in terms of data base availability?

- ▶ From PMRA:
 - database support to run the model (especially federal government)
 - QC involved in creating a database of pesticide characteristics, could be shared with other provinces; would need support from PMRA for data collection and access to European data if available (comparative)
- ▶ AAFC and INDIGO model:
 - Physico-chemical properties of all products for Canada were added to INDIGO - done for apple and tree fruit crops; it would be easy to go into DB and change data if new research information on toxicity characteristics of products becomes available
- ▶ QC database: each data is referenced [so that it will be easy to check if data / source is questioned]
- ▶ Computerized model , i.e. web accessible, growers input based on templates so that everyone is using the same [model / database?]

Understanding the model / Interpretation of model output

- ▶ Need advice and awareness on how to use the model(s) and how [output] information would be used
- ▶ Communication of what the indicator is; what it does and does not do
- ▶ Importance of communication when delivering the information [output from the PRI model] because the goal is not elimination of products but a way to be more sustainable.
- ▶ May be valid choice for one place based on options available / situation
- ▶ PRI will not replace other side of the equation / won't replace all decision-making.
- ▶ Need to understand context e.g. product availability;
- ▶ For a value given under a specific pesticide, need ability to query the model, e.g. mitigation measures (link to the indicator), query derivation of the value

6- WHAT DIRECTION OR ADVICE DO YOU HAVE FOR THE WORKING GROUP?

- ▶ Model chosen should be reasonably flexible so that it can be kept current, e.g. ability to replace components as info becomes available
- ▶ Link with OECD work - Canadian position influenced and benefit from OECD
- ▶ Canada's role on OECD Pesticide WG be linked to our WG somehow, i.e. what are they committing us to? is it parallel? (two-way communication OECD-Canadian WG)
- ▶ Link with NAHARP (Allan Cessna just back from OECD - NAHARP made presentation to OECD on water indicator)