

Pesticides Research Strategy
FY81-85

Report
of
The Ecology Committee

Science Advisory Board
U. S. Environmental Protection Agency
Washington, D.C. 20460

January 1981

EPA NOTICE

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PESTICIDE RESEARCH STRATEGY
FY81-85

The Ecology Committee of the Science Advisory Board (SAB) has, after the fact, reviewed the document, "Pesticides Research Strategy FY81-85." The Committee notes that, through the interactions of the Pesticides Research Committee, greater coordination and cooperation is evident between the Office of Pesticide Programs and the Office of Research and Development. The Committee, however, finds the strategy document to be objectionable on the grounds that it emphasizes the risks of human exposure to pesticides and neglects the risks that pesticide use has on other parts of the ecosystem.

The document reflects the philosophy that humans are separable from the environment as a whole. The lack of interest in ecological (systems) processes that pervades the report is contradictory to the mission of an agency that is charged with the protection of the environment. The basic philosophy behind the report has led to a generally impoverished ecological research effort concerning the influence of biocides on natural systems. The confusion of "ecological effects" with "acute and chronic toxicity" (page 162 of the Strategy) is a good example of the substitution of highly developed toxicological techniques for genuine ecological research. This is simply not consistent with current and emerging concepts and approaches to environmental science.

The document should have been carefully rewritten before release. It is an important document, which is to serve as a basis for research strategy and regulatory policy. The regulatory process for which the proposed pesticide research strategies are designed is ultimately to fulfill the EPA's charge to protect humans and their environment.

As far as humans are concerned, pesticide toxicology rather than epidemiology is overstressed, and the recognition of the potential for epidemiology to provide a more realistic understanding of human exposure and who is really exposed is insufficiently recognized. Human pesticide exposure and the related adverse health effects are significantly influenced by human life-style characteristics, competing environmental stresses in the real world, the numerous unique host characteristics which modify exposures, and the related health consequences. We need to be concerned not only with human health effects from the exposure itself but also with the secondary result of vector insecticide-resistance and the resurgence of malaria and other vector-borne diseases.

We believe that the Agency's promulgations designed to protect human health and the proposed research strategies to ensure that these promulgations are based upon knowledge and data that are scientifically sound would be greatly strengthened by a larger number of epidemiologic studies, which truly reflect all health-related effects from pesticide applications.

The Integrated Pest Management (IPM) Program is more in keeping with the ecosystem approach to pesticide policy. IPM takes into account the intelligent use of pesticides, if and where pesticides are needed. In addition, the use of biological controls brings intraspecific and interspecific phenomena to do what pesticides are intended to do but without the risk of having poisons that linger in the environment.

We were disappointed that a research strategy for EPA did not include or consider the role of other agencies such as the National Institute of Environmental Health Sciences. The problem of pesticides and the gaps in knowledge are large enough that the talents of other agencies should be recognized in a research plan.

Various sections of the report, when viewed as a whole, appear incongruous and mutually contradictory. To what extent are the aspirations expressed in the section, "Exploratory Research," seen as ORD products in the five years or as ongoing studies in the "Epidemiology Studies Program" and/or "Laboratory Output Plans" and "Major Milestones"? It is difficult to equate these sections of the document.

Two key elements of the "Pesticides Research Strategy FY81-85" are quality assurance and validation of predictions based upon laboratory toxicity tests in "real world" situations (i.e., simulated or natural complex ecosystems). Unfortunately no substantive evidence is provided in the Strategy document that adequate attention has been given to statistical methods needed to achieve these objectives. Since the EPA Science Advisory Board Water Quality Criteria Subcommittee found inadequate statistical analyses in all of the 65 aquatic life criterion documents, it seems prudent to assess EPA's statistical capabilities and strategy in the "Pesticides Research Strategy" document. The Ecology Committee is charged with the responsibility of seeing that EPA's activities, as reviewed, are scientifically creditable and defensible. The strategy will be neither if more attention is not given to statistical analysis of data, even if the data are generated by industry.

The Ecology Committee recognizes the public benefits to be derived from the intelligent use of pesticides. It is also recognized, however, that in the long run the cost of cleaning up pesticides or other toxic products in the environment will be much reduced by education of the public-at-large. For this reason, the Ecology Committee strongly recommends that EPA establish a new administrative unit to respond to the educational needs of the human population of the United States concerned with the reduction of the use of pesticides. The new unit should also monitor and recognize, by appropriate means and channels, state agencies that have made outstanding contributions to the reduction of the use of pesticides. The new unit should give additional attention to the certification

and recertification functions in the use of pesticides for those states which have not developed their own systems. Where possible the new unit should establish and supervise science institutes, similar to programs at the National Science Foundation, for primary, secondary, and college teachers to expand public awareness of the need for reduction in the use of pesticides.

Integrated pest management, simply defined as the ecological approach to pest control, provides the best opportunity for EPA to reduce the use of pesticides and consequently greatly to decrease the deliberate introduction of toxic chemicals into the environment. IPM provides a framework for combating the ecological imbalances resulting from pest resistance and pest resurgences, for economic savings by reducing the ever escalating costs of pesticide use, and for decreasing adverse effects on human health and non-target organisms.

In the Committee's view, concentration of more of EPA's total resources upon research and education relating to IPM could be the single most positive approach to ameliorating the enormous problems of regulation and protection of the environment resulting from the injudicious use of pesticides. Widespread recognition and adoption of the IPM philosophy could almost immediately produce major reductions in pesticide use by replacing the pest eradication philosophy with a "treat only when necessary" philosophy. We support the following areas for emphasis:

1. IPM needs and accomplishments becoming a critical part of the Rebuttable Presumption Against Registration (RPAR) process in evaluating the benefit/risk of pesticide use.
2. Sponsorship of modest extramural grants to evaluate the quantitative effects of IPM programs on crop production economics and on the effects of pesticides on non-target organisms, environmental quality, and human health.
3. Substantially increased efforts in environmental education emphasizing IPM in agriculture and urban pest control. These should be aimed at both the consuming public and the pest control specialists.
4. Training and examination in IPM practice becoming a regular part of the "certified operator" training program.
5. EPA sponsorship of a series of "distinguished awards" for advances in IPM techniques and practices to be administered by the scientific societies concerned, e.g., Entomological Society of America, American Phytopathological Society, and Weed Science Society of America, perhaps through the Intersociety Consortium for Plant Protection.

In addition to the above substantive comments, the Committee was appalled that the draft report, as presented to the Ecology Committee on November 20, 1980, was scheduled to be published shortly thereafter. Errors of fact and lack of clarity and organization were numerous. As a small example, nosema [sic. correct form is Nosema], as stated on page 162, is a protozoan, not a virus. Of greater import, on the bottom of page 17 of the document, the differences between humans and other organisms are seriously misrepresented. The Committee suggested at the November 20, 1980, meeting that the proposed schedule for publication be seriously reconsidered.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

January 28, 1981

OFFICE OF
THE ADMINISTRATOR

Dr. John E. Cantlon
Chairman
Science Advisory Board
U. S. Environmental Protection Agency
Washington, D.C. 20460

Dear Dr. Cantlon:

Dr. Dowd, in his capacity as Staff Director of the Science Advisory Board, suggested some months ago that it would be fruitful for several of the research strategies to be reviewed by the Board. The Ecology Committee, acting on that suggestion, undertook a review of the "Pesticides Research Strategy FY81-85." To supplement the disciplines available within the Ecology Committee, Dr. John Davies and Dr. Robert Metcalf of the FIFRA Science Advisory Panel were invited to participate in the review on November 20-21, 1980.

The attached report constitutes the Ecology Committee's review of the Strategy document.

The Committee has concurred on the following points:

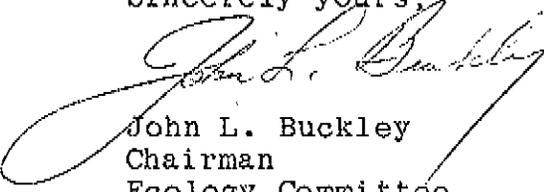
1. Use of the Pesticides Research Committee has resulted in greater coordination and cooperation between the Office of Pesticide Programs (OPP) and the Office of Research and Development (ORD)--a much desired accomplishment.
2. Unfortunately, deliberations of the Research Committee have resulted in almost exclusive emphasis on research on effects on health.
3. The Ecology Committee suggests that a clearer understanding of health effects could be achieved through greater emphasis on epidemiological research.
4. The Ecology Committee feels that ecological research should receive far more attention than is evident from the Strategy.
5. The possibility of reducing dependence on chemical pesticides through increased emphasis on development of

integrated pest management (IPM) and increased public education about IPM methods receives far too little attention.

6. The Strategy document is poorly written. It should not be released until it has been carefully edited for accuracy and clarity.
7. The Strategy is not comprehensive. It fails to note or take adequate account of research that is supported by other government agencies.

In summary, the Committee is disappointed in the "Pesticide Research Strategy FY81-85." While the concept of joint research planning has led to better coordination between OPP and ORD, it is not at all clear that it has led to better research planning.

Sincerely yours,



John L. Buckley
Chairman
Ecology Committee

Attachment