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PESTICIDE PROGRAM OF THE CALIFORNIA DEPARTMENT OF FISH AND GAME, PART I

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It is certainly a pleasure for me to participate in the CalCOFI Conference Program. This is the first time I have had the opportunity to visit with you people and discuss the involvement of the Department of Fish and Game in pollution problems involving pesticides and heavy metals. We have had considerable experience in working on these types of problems. The Department was the first state conservation agency to assign personnel full time to pesticide matters, and has supported an expanding pesticide investigation program since 1957. The activities involving heavy metals have generally been assigned to the people who are involved in pesticide work and to other personnel of the Department doing other phases of pollution investigations.

The discussion today will pertain to the ongoing pesticide program of the State and of the Department of Fish and Game as well as our current efforts involving the problems relating to heavy metal contamination. I will discuss the broad aspects of our programs and Jack Linn, Fisheries Biologist on the Pesticide Investigations Project will present the more detailed aspects of these programs and include some of our current findings.

The State's pesticide program in a practical sense is a multi-agency approach to problem solving. It involves primarily six State departments; Agriculture, Public Health, Fish and Game, Conservation, Water Resources, and State Water Resources Control Board. Each of these departments has individual responsibility and programs in the pesticide field and also participates in cooperative efforts through administrative and legislative assignment.

A very brief summary of some of the major aspects of state programs might be helpful at this point in illustrating the roles and involvement of various agencies.

The Department of Fish and Game's Environmental Protection Program has surveillance and research aspects, both aimed at problem solving. The fish and wildlife problems result from direct contact with toxicants of various types and other pollutants and also from long-term environmental contamination. We are concerned with the untoward side effects of toxicants on all types of fish and wildlife and their environment.

The Department of Agriculture is the agency responsible for the registration of any and all pesticides used in the state. There are about 16,000 materials registered at the present time. They also have regulatory power over the uses of pesticides which may involve (1) initiation of punitive action for violations of terms of regulation; (2) seizure of crops that are found to have pesticide residues in excess of legal tolerances and (3) punitive action when pesticides are misused.

County Departments of Agriculture, through the Agricultural Commissioner in each county, enforce the state's pesticide regulations at the local level. This system of enforcement is different than those of other states and, in my estimation, is superior; it provides for local control, where the problems and action really are. The Agricultural Commissioners are workhorses both in enforcing the laws of the state and in helping us get at pesticide problems involving fish and wildlife.

The Department of Public Health has major responsibility in protecting the public from harmful exposure to pesticides in processed food. They monitor processed food for "over tolerance" pesticide contamination. The difference between the Department of Agriculture's responsibility and the Department of Public Health's responsibility in testing food for residue content is that Public Health's jurisdiction covers processed food while Agriculture's pertains to raw agricultural products. Foods are considered raw agricultural products until frozen or put in cans.

The Department of Public Health may also take steps to protect public health from contaminants that may exist in the flesh of sportfish or wildlife. The most recent example of this type of action was a warning from the Public Health Department that it is not wise to eat large striped bass from the San Francisco Bay-Delta area more than once a week because of the mercury contamination of that species.

The University of California makes recommendations for proper uses of pesticides and publishes about 1,400 of these recommendations each year. They are made only after the materials are tested for efficacy and side effects by the University staff. If all farmers followed the advice of the University regarding the use of pesticides there would be a lot fewer fish and wildlife problems. Unfortunately, the law does not require that the recommendations of the University be followed. The farm advisor is the "right arm" of the University at the local level; as is the County Agricultural Commissioner for the Department of Agriculture. In terms of involvement in pesticide matters the Agricultural Commissioner enforces the laws; the farm advisor prescribes proper uses.

The State Water Resources Control Board enforces water quality standards relative to pesticides and

other pollutants. Recently they have been quite instrumental in developing a plan for a comprehensive statewide monitoring program that would include pesticides and other pollutants. We are hopeful that this program will be implemented as it is sorely needed.

The Departments of Water Resources and Conservation are interested in pesticides as they may affect various projects in which they are involved. For example, Conservation is interested in both beneficial and harmful attributes of pesticides that may be used in forests. The Department of Water Resources is concerned primarily with contamination by pesticides in waters in state water projects.

The State agencies are involved in many cooperative projects with each other as well as their counterparts in the Federal Government such as USDA, U. S. Public Health Service, Fish and Wildlife Service, FWQA, and others.

There are several multi-agency programs participated in by the Department of Fish and Game. For example we are involved in a pesticide registration review committee in which we have an opportunity to review information on toxicity and proposed uses of candidate pesticides. Through this procedure, the Department can and has altered some of the proposed uses of pesticides and in some cases has prevented some pesticide uses employed in other states from being applied in California because of potential hazard to fish and wildlife. However, the large number of pesticides registered each month and the voluminous data required for each product limit the number of products that are subjected to thorough review by our personnel. Our reviews are usually restricted to a few of the pesticides that are known or suspected to be highly hazardous to non-target animals.

The Department is also represented on a newly formed pesticide advisory committee. It was established by the legislature last year to assist the Director of Agriculture in regulating the use of pesticides. The Committee has an interesting composition which includes representatives of six state agencies and a representative from outside state service in the fields of public health, ecology, biology, and agriculture. These people meet together to help the Director of Agriculture with regulatory problems. To date this Committee has been most active in the area of worker safety. The problems that the farm workers have had involving pesticides have been quite numerous but until recently have not been well documented. The Committee, for the first time, has developed guidelines for safe entry by workers into pesticide treated fields that are aimed at preventing harmful exposure to pesticides. Prior to this action there had been a reluctance on the part of manufacturers to provide specific information as to when it was safe to enter a field after a crop was sprayed because of potential liability claims against the pesticide industry for illness attributed to pesticide exposure.

The Pesticide Advisory Committee was also quite active in securing the phasing out of DDT in California.

With the help of the 1969 Legislature, the Department of Agriculture now has a computerized pesticide use reporting system. This system is very helpful to the various state agencies involved in pesticide matters. It provides monthly reports of practically all pesticide uses in the state, including type and amount of material and location of application designated by township, therefore, we now have a very accurate and up-to-date measurement of input of pesticides into the environment. This, of course, is helpful in looking for problems, helpful in establishing monitoring programs, and helpful in directing action programs to the areas of greatest need.

Californians can be proud of their State's efforts in identifying fish and wildlife pesticide problems and taking remedial action to solve these problems. This State is recognized as a national leader in this regard. However, there is room for improvement and we must strive to better the record.

There is one major area where both State and Federal agencies and the pesticide industry is lacking and this is in preventing environmental pesticide problems from developing. What is needed is a preregistration and preuse pesticide testing system that would provide assurance that only those pesticides could be used that do not cause untoward side effects. This would, of course, require changes in current testing programs and in laws governing the use of pesticides. More specifically, the criteria for preregistration laboratory testing of pesticides should be updated and standardized wherever possible and, most important, criteria should be developed for field testing for side effects under actual operational conditions of application. Undoubtedly the most important facet in assessing the potential environmental impact of a new pesticide is to study its effects on key attributes of the environment under "natural" conditions following controlled applications.

The expected benefits of such an approach would be twofold, first, to establish a more standardized and effective method of presale testing of pesticides and second, to develop controls over the use of pesticides that would appreciably reduce the probability of environmental pesticide problems from developing.

Regarding our handling of heavy metals and PCB's. The group in state service that is doing most of the work has basically the same representation as the one working on pesticide problems. Currently there is a mercury monitoring program within the state that has been involved with the public health rather than the biological effects on the organisms directly contaminated with mercury. There is also a limited amount of Fish and Wildlife data on lead contamination that is being generated in the state. This information consists primarily of measurements of residues occurring in marine fish. At the present time, we look forward to becoming more active in this particular area. The Department's pesticide project has been recording the levels of polychlorinated biphenyls, (PCB's) in fish and wildlife samples for several years and have been more or less sitting on this information. This information will be available

when it is figured out what biological significance, if any, these PCB's may have.

Briefly I would like to comment on the scope of the Department's pesticide and heavy metal program that is within the Wildlife Management Branch. The program has both surveillance and research aspects. Our budget is approximately $200,000 annually including grants. We have a staff of 11 fulltime employees. These include fish and wildlife biologists, chemists and after July 1, we will have marine biologists added to the staff also. We also call on the field force of Department personnel as needed to handle pollution problems.

Environmental Services Branch has a very active program in the field of water pollution involving various types of pollutants including those types of materials we are discussing today. This Branch provides most of the Department's efforts in analyzing samples for the presence of heavy metals.

At this point, I would like to turn the rest of our presentation over to Jack Linn who will discuss some of the more detailed aspects of our pesticide and heavy metals investigations.