SENSOR-Pesticides

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For additional information, contact:

Geoffrey Calvert, MD, MPH
Technical advisor, SENSOR-Pesticides
NIOSH
4676 Columbia Parkway, R-21
Cincinnati, OH 45226
Phone: 513-841-4448
FAX: 513-841-4489
E-mail: jac6@cdc.gov

Overview of SENSOR-Pesticides

The mission of the Sentinel Event Notification System for Occupational Risk (SENSOR) program is to build and maintain occupational illness and injury surveillance capacity within state health departments. Under this program, NIOSH provides cooperative agreement funding and technical support to state health departments to conduct surveillance on one or more occupational illnesses or injuries.

One of the illnesses supported under SENSOR is acute occupational pesticide-related illness and injury. Health departments in five states (California, Florida, New York, Oregon, Texas) are provided SENSOR funding to bolster pesticide-related illness and injury surveillance. Using funds from US EPA, NIOSH provides additional support to three states (California, New York, and Texas). Three additional states are unfunded SENSOR-Pesticides program partners (Arizona, New Mexico, and Washington state). Besides tabulating the number of acute occupational pesticide-related cases, these SENSOR-supported surveillance systems perform in-depth investigations for case confirmation, and develop preventive interventions aimed at particular industries or pesticide hazards. The SENSOR-Pesticides program is most useful for timely identification of outbreaks and emerging pesticide problems. However, a national aggregated database is being created. It will consist of acute occupational pesticide-related illness and injury cases submitted annually by each of the SENSOR-pesticides states. This database will be useful to assess the magnitude and trend of acute occupational pesticide-related illness and injury.

This report describes the accomplishments achieved by the SENSOR-pesticides program during fiscal year 2000. Despite the many recent successes, more needs to be done to improve protection of workers and the general population. With additional funding, tracking of acute occupational pesticide-related illness can be expanded, and effective interventions can be supported.

Recent Accomplishments of the National SENSOR-Pesticides Program

- A national consensus was reached on a pesticide-related illness case definition and case reporting formats. The consensus process was chaired by NIOSH, and involved state partners, the U.S. Environmental Protection Agency, the Council of State and Territorial Epidemiologists (CSTE), and representatives from CDC/NCEH. The case definition has been widely praised and is used by all eight state health departments with surveillance activities for pesticide-related illness. In June 1999, CSTE adopted a recommendation that all states conduct surveillance of pesticide-related illness and that this case definition should be used. Use of this case definition will insure that pesticide poisoning data can be compared and aggregated across all states to assess trends, determine magnitude, and identify emerging problems. In January 2000, the case definition was updated to improve clarity, to add an additional frequently asked question to appendix 1 (appendix 1 contains several frequently asked questions and responses), and to update appendix 2 (appendix 2 provides characteristic signs and symptoms for several pesticide active ingredients and

classes of pesticides).

- An updated listing of standardized variables was released in September 2000. The standardized variables, like the case definition, were developed through a collaboration lead by NIOSH, with participation of experts from federal agencies (US EPA, NCEH), non-federal agencies (CSTE, AOEC), and state health departments or other state designees.

- An updated version of the database software (SPIDER) was released in June 2000. This software is useful for states to enter data on each individual with pesticide-related illness. This software also will allow NIOSH to aggregate data across states.

    - To our knowledge, this is the first software that is capable of collecting, managing, and reporting in a standardized fashion all pertinent information needed by NIOSH and US EPA to conduct surveillance on acute pesticide-related illness. By collecting information on the pesticide formulation, where it was used, and how it was applied, the circumstances responsible for poisoning events can be identified and this information can be used to design prevention strategies.

- A survey of the SENSOR-pesticides program was conducted and a summary of the results was distributed in June 2000. The summary included:

    - A contact list of folks involved with SENSOR-pesticides;

    - A description of the methods used to contact health care providers (all but one state reported distributed copies of the EPA pesticide poisoning manual);

    - Web addresses of state-based pesticide poisoning surveillance programs;

    - Useful pesticide-related web sites identified by the states;

    - Pesticide-related materials provided by each state.

- Four articles were recently published in the CDC Morbidity and Mortality Weekly Report (MMWR) that highlighted pesticide problems identified through the SENSOR-Pesticides program. Copies of these articles can be found at: http://www.cdc.gov/mmwr/.

    - The first was an incident in which a crew of 34 field workers became ill after entering a field sprayed two hours earlier with a pesticide solution containing carbofuran (this insecticide has a restricted entry interval of 48 hours). This article was praised by the U.S. Environmental Protection Agency (EPA) for reenforcing the importance of compliance with the EPA's Worker Protection Standard, and documenting the need for safer pesticide alternatives. State

involved: California (California Department of Health Services). *MMWR 1999; 48:113-116, addendum MMWR 1999;48:195.*

- The second article described 42 cases of pesticide-related illnesses attributed to occupational use of flea-control products. Most of the products that were associated with illness contained either phosmet, an organophosphate insecticide, or pyrethrin. This report reinforced the need for workers to be trained in the safe handling of flea-control products, and that the substitution of safer, less toxic pesticides should be adopted when feasible. As a result of this article, the US EPA and eight State Health Departments are notifying grooming shops, veterinary offices, and professional veterinary associations to increase awareness of this problem. States that provided data: California (California Department of Pesticide Regulation), Texas, and Washington. *MMWR 1999; 48:443-447.*

- The third article identified 123 cases (34 probable and 89 possible cases) of pesticide-related illness that were associated with the 1998 Medfly Eradication Program in Florida. The identified cases likely resulted from sensitivity to the irritant/allergic effects of malathion/bait. This article resulted in interventions by US EPA, US Department of Agriculture, and the Florida Dept of Agriculture to expand efforts to prevent future medfly infestations, and to reduce public health risks from future aerial pesticide applications. In addition, consultation was provided on the potential human health effects associated with West Nile Virus vector control activities in New York City. State involved: Florida. *MMWR 1999; 48:1015-1018, 1027.*

- The fourth article described illnesses associated with insecticide dispensers among 97 individuals. A total of 94 (97%) of the cases were associated with pyrethrin/piperonyl butoxide exposure. The article received extensive media attention. The Consumer's Union has called for the US EPA to adopt the interventions recommended in the article. State that provided data: California (California Department of Pesticide Regulation), Florida, Washington. *MMWR 2000;49:492-495.*

- The program provided input to the Government Accounting Office (GAO) on their reported titled "Pesticides: improvements needed to ensure the safety of farmworkers and their children" (GAO/RCED-00-40). This report recommended that US EPA work with NIOSH to improve surveillance of acute occupational pesticide poisoning. This recommendation was "strongly welcomed" by US EPA.

- NIOSH is collaborating with US EPA, and other agencies, to address the need for improved recognition, management and prevention of pesticide-related health conditions. As part of this effort, NIOSH assisted in preparing a document titled "Pesticides and national strategies for health care providers: a draft implementation plan." A draft of this

document was sent for review in Fall 2000. The final version of this document will be published in 2001 by the National Environmental Education and Training Foundation (NEETF). (NEETF was chartered by Congress in 1990 with a mission to support environmental education.) In addition, NIOSH has contributed $25,000 to support a conference on this topic to be held in Washington, D.C. in December 2001.

- NIOSH published the "Worker Health Chartbook, 2000" in September 2000. It is a comprehensive and accessible summary of surveillance data on occupational illnesses and injuries. Approximately 5 pages of the book are devoted to acute occupational pesticide-related illness and injury. *Rosa RR, Hodgson MJ, Lunsford RA, Jenkins EL, Rest K, editors. Worker health chartbook, 2000. Cincinnati, OH: Dept. of Health and Human Services (US), National Institute for Occupational safety and Health; 2000 Sept. DHHS (NIOSH) Publication No.:2000-127.*

- In September 2000, NIOSH awarded a cooperative agreement to the Michigan Department of Health to establish a core occupational health surveillance program. Acute occupational pesticide-related illness will be the first condition placed under surveillance by this program.

- In September 2000, NIOSH awarded the Washington State Department of Health (WSDOH) with a cooperative agreement to improve surveillance of acute occupational pesticide-related illness. Specifically, WSDOH will evaluate and improve the quality of data collected; improve database management using SENSOR-pesticides standardized variables; and, enhance analysis and dissemination surveillance data.

- SENSOR-Pesticides has recently become aware of surveillance activities conducted jointly by the Louisiana Department of Health and Hospitals and the Louisiana Department of Agriculture and Forestry. Representatives of this program participate in the SENSOR-pesticides listserv. We are providing technical support to this program and will be encouraging them to use the standardized case definition and variables.

- A work group was created to provide guidance to the Florida Department of Agriculture and Consumer Services on criteria to determine when aerial application of agricultural pesticides over urban areas should be ceased based on detection of adverse human health effects. Representatives of the Florida SENSOR-pesticides program and the NIOSH SENSOR-pesticides technical advisor are members of this work group. It is hoped that the work group's report will also be useful for other jurisdictions.

Cases of Acute Occupational Pesticide-related Illness and Injury

Table 1 provides the number of cases of acute occupational pesticide-related illness reported by each SENSOR state. For most states, the numbers reflect cases reported in 1999. However, California has not yet provided 1999 data. Instead cases reported in 1998 are provided.

Table 1: Cases of acute occupational pesticide-related illness reported in 1999 (unless specified), by state and classification category

	Arizona*	California†	Florida	New York	Oregon	Texas	**Total**
Definite	1	16	67	7	0	12	103 (14%)
Probable	6	138	22	5	2	7	180 (25%)
Possible	15	135	79	3	25	135	392 (53%)
Suspicious	0	53	3	1	3	0	60 (8%)
Total	22	342	171	16	30	154	735

* This state received no funding from NIOSH or US EPA for surveillance of acute occupational pesticide-related illness.

† Data reported in 1998 are provided. 1999 data are not available for this state.

Summary of activities of state-based programs funded by NIOSH/US EPA

Annual and semi-annual reports are submitted to NIOSH by each of the state health departments that receive funding for surveillance of acute occupational pesticide-related illness. NIOSH sends US EPA copies of reports submitted by states receiving US EPA funds. Below we provide for each state a brief summary of accomplishments. Much of this material was culled from reports recently submitted by these states.

California Department of Health Services
Contact: Rupa Das, MD
phone: 510-622-4406
email:rdas@dhs.ca.gov

CDHS received NIOSH funding support for surveillance of acute occupational pesticide-related illness during fiscal years 1988 through 1992. This program did not apply for support during the second SENSOR funding cycle (fiscal years 1993 through 1997). NIOSH funding, through SENSOR, was resumed in October 1997. This program has also received funding support from US EPA since October 1997.

- Incidence rates for acute occupational pesticide-related illness have been calculated. Denominator data was obtained from the California Annual Average Labor Force and Industry Employment statistics. The overall rate for 1998 was 4.1/100,000 workers employed in California. The incidence rate was highest for those employed in agriculture, forestry and fishing (73.2/100,000). The other industry with an incidence rate that exceeded the state average was mining (4.2/100,000).

- Effective July 1, 2000 new regulation mandates standardized reporting of cholinesterase test results by all licensed California clinical laboratories (California Code of Regulations, sec. 6728F). In 1998, CDHS staff conducted a telephone survey of laboratories approved by the state of California to conduct cholinesterase assays. 27 of the 33 state laboratories licensed within the state to perform cholinesterase testing were contacted. Of these, 14 labs offered to voluntarily report their results, 12 refused and 1 was undecided. Laboratory-based cholinesterase reporting will be useful to detect pesticide illnesses not already being captured through other surveillance methods.

    - CDHS staff were successful in obtaining funding for a project implementing and evaluating direct laboratory reporting of cholinesterase test results as a surveillance method. This project, funded by NIOSH (under NORA), has separate staff, but works closely with SENSOR Pesticide Poisoning California (SPPC). Collaborators on this project include staff from UC Davis, DPR and OEHHA.

- The California Legislature enacted sweeping reforms to California's workers'

compensation system in 1993. As part of this reform legislation, the Workers' Compensation Information System (WCIS) was established by the California Division of Workers' Compensation (DWC). Beginning March 1, 2000, standard data has been transmitted to the WCIS by Electronic Data Interchange (EDI), the computer-to-computer exchange of data or information in a standardized format. First Reports of Injury must be submitted by EDI beginning March 1, 2000 (a variance till January 1, 2001 may be granted by the Administrative Director of DWC). First Reports must be transmitted to WCIS no later than 5 days after knowledge of the claim. These First Reports contain detailed occupational, demographic and injury information.

- CDHS has continued to actively pursue a collaborative relationship with DPR. CDHS has continued to hold meetings approximately monthly with DPRs Worker Health and Safety Branch. During these meetings, CDHS and DPR have discussed the respective roles of each agency with regard to surveillance and investigation of pesticide poisoning incidents and unique issues related to individual exposure incidents. To assure the legitimacy and success of collaborative efforts between the two agencies, CDHS staff wrote and submitted a Memorandum of Understanding (MOU) to DPR on January 4, 1999. The MOU is currently awaiting further input from DPR management.

- Between March 1, 1999 and April 30, 2000 field investigations were conducted for 13 pesticide exposure events. A brief summary for some of these investigations follows:

    - In July 1999, at least 9 farm workers became ill after exposure to pesticide drift while weeding a cotton field that was adjacent to another field that had been sprayed one hour earlier. An MMWR article has been drafted that describes this event and provides recommendations to prevent similar events in the future.

    - Thirty-one emergency responders, school and other workers were potentially exposed to metam-sodium drift in Tulare County in November 1999.

    - In March 1999, two workers at a cell biology research company in Marin County were exposed to paraformaldehyde during a procedure to disinfect the cell culture room. Paraformaldehyde was used as a pesticide but the product was not registered for this use.

    - In March 2000, thirteen workers were evacuated, nine sought medical care, and one worker was hospitalized after an application of diazinon in Los Angeles County Coroner's office.

    - In January 2000, eleven Alameda County police, fire, and paramedic emergency response workers received medical care after being exposed to malathion while treating a man who committed suicide by ingesting and dousing himself with the pesticide.

- In March 2000, 100 employees were evacuated from their office building in Los Angeles County after the building was treated with propetamphos and methoprene to treat fleas. Fourteen of these employees were evaluated and treated for headaches and upper airway irritation. Information on this and other incidents supported EPAs finding that propetamphos was still associated with irritant responses despite changes in its formulation that were intended to eliminate this problem.

Florida Department of Health (FDOH)
Contact: Carolyn Voyles
phone: 850-245-4117
email: carolyn_voyles@doh.state.fl.us

The SENSOR-pesticides program was initiated in Florida in 1997.

- The number of cases of acute pesticide-related illnesses detected by the Florida Department of Health (FDOH) has risen over 40 fold (from less than 4 cases per year to 171 cases in 1999).

- The program has completed classification of all 1999 cases. Reports of potential cases continue to be provided by the state Department of Agriculture, the three Poison Information Centers, County Health Departments, the public, and the media.

- Progress has been made with obtaining data from the Florida Division of Workers' Compensation. An agreement between FDOH and the Florida Division of Workers' Compensation has been drafted and will permit sharing of minimal data (worker name, physician name, and four diagnosis codes) from accepted claims. FDOH will follow-up on this information in the same manner as they would on any other case report (i.e. contacting the health care provider and case for additional information).

- Following is a brief summary of several acute pesticide-related illness events that were recently identified:

  - The Florida Department of Health lead the surveillance activities during the 1998 Medfly Eradication program. This effort lead to a widely publicized MMWR article (MMWR 1999; 48:1015-1018, 1027).

  - The FDOH was also responsible for reporting the sentinel cases involving pyrethrin exposure from insecticide dispensers. This lead to another widely publicized MMWR described above.

- On October 13, 1999 the program received a report of mass pesticide-related illness associated with an unintentional methyl bromide release in Immokalee, Florida. An employee of Agro Distribution punctured a container that held 940 pounds of methyl bromide. Methyl bromide vapors traveled at least 100 yards to the Sunrich tomato packing facility. In all, 34 workers received medical attention as a result of this exposure including one employee of Agro, two truck drivers, four police officers and 27 employees of Sunrich. Prompt notification of this release may have prevented many of these illnesses.

- Sodium metabisulfite incident - in April 1999, three Vietnamese fisherman were found dead from sodium metabisulfite intoxication in Bay County, Florida. The sodium metabisulfite was being used as a preservative on fish.

- Neilsen Media Research - over 100 employees were evacuated from their building in Dunedin, FL. The night before, the carpets were treated for fleas using a mixture of pyrethrins, and allethrin. An investigation is being conducted by FDOH.

New York State Department of Health (NYSDOH)
Contact: Matt Mauer, DO
phone: 518-402-7900
email: mpm08@health.state.ny.us

The NYSDOH has received funding support for surveillance of acute occupational pesticide-related illness since fiscal year October 1992. This program has also received funding support from US EPA since October 1997.

- NYSDOH has been involved with surveillance of illnesses associated with West Nile Virus vector control. NYSDOH created a report form that was made available for use by county health departments. NYSDOH also provided consultation on the potential human health effects associated with West Nile Virus vector control activities in New York City.

- A worker protection fact sheet for outdoor workers was prepared. The fact sheet was designed to provide information to workers on how to protect themselves from mosquito-borne illness as well as from pesticides used for mosquito control. The fact sheet was developed in response to the 1999 West Nile Virus outbreak and pesticide-based vector control response in New York. Another fact sheet was developed for health care professionals and mailed to those in the counties immediately surrounding New York City (the New York City Department of Health sent their own fact sheet to health care professionals in NYC).

- SPIDER 1.0b was released in June 2000. Major changes were made to the way SPIDER handles pesticide products, ingredients, and unidentified pesticide agents. The functional class and chemical class codes were also updated. Finally, bugs in the earlier version were corrected, and the EPA pesticide product data was updated.

- SPARCS (Statewide Planning and Research Cooperative System) data from 1998 was used to identify 38 hospitals with hospital discharges containing the diagnosis of unintentional pesticide poisoning. These hospitals had 50 such discharges in 1998. When investigated by NYSDOH staff, 32 (64%) were determined to be acute pesticide poisoning cases. Only seven of these cases were previously identified (via other reporting sources) by the New York State Department of Health.

- NYSDOH staff conducted a site visit in February 2000 at the New York Botanical Garden, a large botanical garden where, in the past, some workers had acute occupational pesticide-related illness. Pesticide applications were again observed and a follow-up letter sent outlining additional steps recommended to improve worker safety.

- NYSDOH staff traveled to Long Island, New York, to meet with the clinic director and migrant outreach worker of a county health clinic in an area with one of the largest concentrations of commercial greenhouse acreage in the country. Pesticide safety information and educational materials were provided to the migrant outreach worker.

Oregon Health Division (OHD)
Contact: Catherine Thomsen
Telephone: 503-731-4184
email: catherine.l.thomsen@state.or.us

The OHD has received SENSOR funding for acute occupational pesticide-related illness since October 1987.

- Outreach activities have been the focus of much OHD effort. In April and May 2000, 17 workshops were held throughput the state. The workshops focused on health care providers and outreach/social service providers in local health departments and clinics. The primary messages they provide to health care providers are:

    - even suspected pesticide-related illness and injury are reportable under Oregon law;
    - the OHD wants to help the affected individual identify the problem and prevent further exposure;
    - OHD services are confidential–they don't want anyone to lose their jobs.

- The Mexican Consulate in Portland, Oregon has organized a program called the

"Carousel of Information" to provide assistance to Mexican nationals living and working in Oregon. Beginning in May 2000, weekend events were scheduled around the state in areas where migrant workers and immigrants are most concentrated (6 to 8 such events were planned). At these programs, the Consulate offers consultations on immigration and documentation matters. In addition, Oregon State agencies provide information. In addition to pesticide poisoning prevention, other health-related topics include diabetes, child abuse/neglect prevention, HIV/AIDS, STDs, and tuberculosis. The Carousels are usually held at a middle school. They advertise on local Spanish speaking radio stations and have had very good turnouts: 1380 participants in the initial 4 or 5 events in Woodburn, Madras, Hood River and 1-2 other locations.

- The Oregon Poison Control Center (OPCC) now reports cases to OHD using non-automated fax procedures. Analysis of data from 1994-1998 found that 75% of pesticide poisoning cases requiring treatment with an antidote were not subsequently reported to PARC (Oregon Pesticide Analytical and Response Center). The new OPCC reporting mechanism will hopefully improve reporting to PARC and OHD.

- OHD continues to obtain electronic records of time-loss and denied/deferred workers' compensation claims from the Oregon Workers' Compensation Division. However, no cases have been identified in the past year.

- OHD receives workers' compensation claims data from two insurance companies (Liberty Northwest Insurance Company, and another company whose identity is protected). OHD is exploring ways to efficiently and accurately identify reports of acute occupational pesticide-related illnesses within the data submitted by these insurance companies.

- OHD has arranged to add several occupational illness/injury and workers' compensation questions to the Oregon Population Survey (OPS). The OPS is a state-sponsored biennial telephone survey. The new questions ask whether the respondent had an occupational injury or illness in 1999, and if so, was a workers' compensation claim filed. Although specific types of occupational illness/injury will not be determined, this survey will be useful to determine if illness and injury rates are higher in occupations and industries likely to use pesticides.

- In follow-up to the 1999 MMWR article on illnesses associated with flea-control products, an article on this topic was published in the September 1999 issue of the Oregon Veterinary Medical Association newsletter.

- The Oregon Pesticide Use Reporting System was created through legislation passed in 1999. Through the Oregon Department of Agriculture, all pesticide use by agriculture, forestry, commercial and industrial firms must be reported.. Details are being worked out on what types of data will be collected. OHD is providing consultation on this matter.

- In 1999, an airport security supervisor sniffed an empty metal container during a baggage check and immediately experienced symptoms. The passenger reported that the container held previously held a very strong mixture of bug and weed killer. Although the employer's policy was for security inspectors to sniff container caps or waft aroma toward the inspector's nose, the training these security personnel received apparently encouraged directly sniffing containers whose contents are unknown. As a result of an OSHA investigation and pending citation, airports in other states will be contacted to see if similar problems exist.

Texas Department of Health (TDH)
Contact: Rachel Rosales
phone: (800) 588-1248 or (512) 458-7269
email: rachel.rosales@tdh.state.tx.us

The TDH has received SENSOR funding for acute occupational pesticide-related illness surveillance since October 1987. This program has also received funding support from US EPA since October 1997.

- TDH has strengthened their ties with the Texas Department of Agriculture (TDA). In the past year, there has been almost a doubling in the number of human pesticide poisoning reports received from TDA (from 31 in 1998 to 57 in 1999).

- Currently, data is received from Texas Poison Control Network (TPCN) every 4-6 months. Efforts are underway to obtain this data more frequently (every 2-3 months). One barrier to receiving more timely data is that the regional poison control centers may not promptly report their data to the TPCN.

- SENSOR-pesticides staff from the TDH have made site visits to 6 of the 14 federally funded Migrant Clinics in Texas. Much information is shared during these visits, including an explanation on how reporting of incidents of pesticide-related illness benefits the migrant clinic and the migrant farmworker. These efforts have resulted in an increase in reporting by migrant clinician's. In 1999, 12 reports of acute occupational pesticide-related illness were provided by these clinician's, compared to 5 reports in 1998.

- With the assistance of the National Center for Environmental Health, the TDH provides migrant clinician's with access to testing of urinary pesticide metabolites. To date, approximately 20 urine samples have been forwarded to NCEH for analysis.

- Efforts are underway to increase reporting of cholinesterase test results. In August 2000 a letter was sent to all laboratories that currently report elevated blood lead levels. This

letter reminded laboratories to report abnormal cholinesterase levels as part of the Occupational Conditions Reporting Act.

- The TDH receives over 10,000 reports of human pesticide exposure per year. Over 99% of these are received electronically. Complete follow-up is carried out on only about 50% of the electronically reported cases. The volume of cases, and the time-lag between the incident and the report, hampers the ability to follow-up on all cases. The TDH is working to improve follow-up by attempting to obtain more timely reporting of cases.

- There are ongoing efforts to obtain data from the Texas Workers' Compensation Commission (TWCC). TDH received one electronic data transfer of cases in FY99. However, additional data transfers have been hampered by the transience of TWCC contacts, who do not appear to stay in their positions for very long. Whenever, these contacts leave, the TDH must find a new contact at the TWCC. TDH has recently acquired a new contact at TWCC. Receipt of another TWCC transaction is expected in FY01.

- TDH finalized a survey tool titled "farmworker/pesticide handler worker protection standard". In FY99 this tool was used in a pilot to conduct surveys in three Texas regions including the Lower Rio Grande Valley (South Texas), San Antonio (Central Texas), and El Paso (West Texas). Approximately 150 farmworkers were interviewed. Based on the pilot test and recommendations from agencies and representatives serving the migrant farmworker community, edits and revisions were made to the survey tool. During FY01 TDH plans to use the newly edited survey tool to conduct surveys with migrant farmworkers in three Texas regions.

- Two field investigations were conducted in FY99. However, none were conducted in FY00. The program indicated that most illness reports were received to late (3-6 months after the incident) to undertake a timely investigation. In addition, the TDA now has a policy to initiate investigations within 12 hours of a report. As a result, TDA usually notifies the TDH after their investigation has been conducted. The TDH is currently working on efforts to improve timeliness of reports and to convince TDA of the usefulness of TDH input into their investigations.

Future Plans of the SENSOR-Pesticides Program

The following items are presented in the order in which we anticipate they will be completed. Those items nearest to completion are presented first.

1. The first draft of a "How To" manual for states who are considering implementing a pesticide poisoning surveillance system is near completion. It will include information on the case definition, standardized variables, use of database software, a discussion of important reporting sources, necessary field follow-up capabilities, and sources of educational materials. A draft expected in November/December 2000.

2. By early 2001 we should have 1998 and 1999 data aggregated from six of the states participating in the SENSOR program. An *MMWR* surveillance summary is planned to distribute the analytic findings from this data. Once the data are cleaned, it will be shared with contributing SENSOR-pesticides states and US EPA.

3. A severity index for acute pesticide-related illness is in development. A draft has been written and is currently in review.

4. Written protocols will be developed for classification of active ingredients, product chemical classes, product functional classes, and physical formulation for new chemicals and products as they are registered by US EPA.

5. We would like to explore NIOSHs role in strengthening outreach to industry and worker stakeholders. This outreach could be useful for developing interventions to prevent acute pesticide-related illness and injury.

6. Recently, NIOSH was invited to participate in the Inert Disclosure Stakeholder workgroup. The purpose of this workgroup is to identify ways to improve public access to information on inert ingredients in pesticides. Despite NIOSHs interest in participating, this invitation was declined due to insufficient NIOSH staffing. Currently, NIOSH has 1.4 FTEs assigned to the SENSOR-pesticides project. If funding can be secured to hire additional staff, we would welcome entertaining this invitation.

7. NIOSH is interested in developing, in collaboration with US EPA, a document that provides guidelines to health care professionals on medical supervision of workers exposed to cholinesterase-inhibiting pesticides. This document would be modeled after one developed in 1995 by the California Environmental Protection Agency.

8. Publications are needed that document emerging problems recently identified by the SENSOR-pesticides program. However, lack of funding and personnel may preclude development of many of these publications.

9. NIOSH is interested in developing an internet-based version of SPIDER. There are several advantages to an on-line system, including efficient updating of software, and efficient updating of variable codes. It is anticipated that this system will eventually allow more timely distribution of surveillance data.

10. The NIOSH SENSOR-pesticides technical advisor is a member of the NIOSH-state occupational health surveillance work group. This group is preparing a document that describes recommended state-based occupational disease and injury surveillance activities. The document will contain recommendations for surveillance of acute occupational pesticide-related illness and injury.

Conclusion

This report describes the achievements made over the past year by the SENSOR-pesticides program. These achievements have helped to reduce the toxicity associated with pesticide exposures. SENSOR-pesticides will continue to build on these to improve protection of workers and the general population. However, more resources are needed to enhance tracking of acute occupational pesticide related-illness. Additionally, more effective interventions to prevent pesticide-related illness and injury are needed. Funding to support expanded tracking and intervention efforts will help to ensure a healthier workforce, a safer environment, and reductions in health care and disability costs.