

7. CASE CLOSURE AND CLASSIFICATION



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7.1 THE CASE CLOSURE PROCESS

Once interviews have been completed, medical information obtained, and any sampling or site inspection conducted, the investigator should evaluate the case for completeness. It may also be helpful to have each case reviewed for completeness by an additional investigator. A list of any additional information needed should then be developed and additional follow-up conducted. After all pertinent information has been collected, the report should go through a formal evaluation and classification. There is often an extremely long delay in obtaining reports from enforcement agencies, so the PPSP may choose to develop a provisional case closure protocol, with final case closure occurring after receipt of the enforcement investigation report.

Case classification is often performed as a group process to help ensure objective and consistent evaluation of all cases within the surveillance program. Some PPSPs have a panel of persons who individually review and classify each case. Afterwards, all panel members' classifications are reviewed, and the panel meets to discuss any differences. Other programs assign two persons who classify cases as a team, with a designated third party to consult when the pair disagree on the interpretation of available case data.

Case information should be reviewed using the matrix in the *Case Definition for Acute Pesticide-Related Illness and Injury Cases Reportable to the National Public Health Surveillance System* [NIOSH 2004]. The reviewers

may sometimes feel there are circumstances with a case that should result in a classification that is different from that obtained by using the matrix. They should record the classification they think is correct and note the reasons for any differences with the matrix classification. If the PPSP is using a separate State classification system in addition to the national case definition, this classification should also be applied at the time of case closure.

7.2 CASE DEFINITION FOR ACUTE PESTICIDE-RELATED ILLNESS AND INJURY CASES REPORTABLE TO THE NPHSS

The case definition described here was developed by a consensus process involving Federal and State agency partners and was adopted by CSTE [1999]. The full text of the case definition and its appendices are included in Appendix D. Portions are provided here for discussion. The case definition provides a consistent, objective approach for assessing information gained about each report. Using this definition to evaluate and classify cases allows an aggregation of data from all States and a comparison of data between States.

7.3 CLINICAL DESCRIPTION

7.3.1 CASE DEFINITION

This surveillance case definition refers to any acute adverse health effect resulting from exposure to a pesticide product (defined under

FIFRA, except that disinfectants are often excluded[§]) including health effects due to an unpleasant odor, injury from explosion of a product, inhalation of smoke from a burning product, and allergic reaction. Because public health agencies seek to identify and prevent all adverse effects from regulated pesticides, notification is needed even when the responsible ingredient is not the active ingredient.

A case is characterized by an acute onset of symptoms that are dependent on the formulation of the pesticide product and involve one or more of the following:

- Systemic signs or symptoms (including respiratory, gastrointestinal, allergic, and neurological signs/symptoms)
- Dermatologic lesions
- Ocular lesion

This case definition and classification system is designed to be flexible in permitting classification of pesticide-related illnesses from all classes of pesticides. Consensus case definitions for

§ Pesticides are defined under the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) as any substance or mixture of substances intended to prevent, destroy, repel, or mitigate insects, rodents, nematodes, fungi, weeds, microorganisms, or any other form of life declared to be a pest by the Administrator of the U.S. EPA and any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant. Pesticides include herbicides, insecticides, rodenticides, fungicides, disinfectants, wood treatment products, growth regulators, insect repellents, etc.

Please note that adverse health effects resulting from exposure to disinfectant products are not reportable in many States because the volume of reports could overwhelm the State's surveillance system; therefore, these cases will not be routinely reported to the national surveillance system. Certain States may collect data on health effects resulting from a few selected disinfectants (e.g., glutaraldehyde). If resources are available, States are encouraged to do surveillance on acute disinfectant-related illness.

classes of chemicals may be developed in the future.

A case will be classified as occupational if the person is exposed while at work (this includes working for compensation; working in a family business, including a family farm; working for pay at home; and working as a volunteer emergency medical technician [EMT], firefighter, or law enforcement officer). All other cases will be classified as nonoccupational. All cases involving suicide or attempted suicide should be classified as nonoccupational.

A case is reportable to the national surveillance system when the following criteria are met:

- Documentation of two or more new adverse health effects that are temporally related to a documented pesticide exposure, combined with
 - a. consistent evidence of a causal relationship between the pesticide and the health effects based on the known toxicology of the pesticide from commonly available toxicology texts, government publications, information supplied by the manufacturer, or two or more case series or positive epidemiologic investigations, *or*
 - b. insufficient toxicologic information is available to determine whether a causal relationship exists between the pesticide exposure and the health effects.

7.3.2 LABORATORY CRITERIA FOR DIAGNOSIS

If available, the following laboratory data may confirm the diagnosis of acute pesticide-related illness or injury:

- Biological tests for the presence of, or toxic response to the pesticide and/or its metabolite (in blood, urine, etc.)

- Measurement of the pesticide and/or its metabolite(s) in the biological specimen
- Measurement of a biochemical response to the pesticide in a biological specimen (e.g., cholinesterase levels)
- Environmental tests for the pesticide (e.g., foliage residue, analysis of suspect liquid)
- Pesticide detection on clothing or equipment used by the case subject

7.3.3 CASE CLASSIFICATION CATEGORIES

The case classification matrix is used to rank the evidence linking the illness/injury to the pesticide exposure. Only reports meeting case classifications of Definite, Probable, Possible, and Suspicious are reportable to NPHSS. Additional classification categories are provided for States that choose to track reports that do not fit the national reporting criteria.

CLASSIFICATION CATEGORIES:

Definite: Objective evidence confirms the exposure and illness, and the temporally related illness is consistent with the known toxicology of the pesticide.

Probable: Objective evidence of either the pesticide exposure or the health effects is available, and the temporally related illness is consistent with the known toxicology of the pesticide.

Possible: Only subjective evidence of exposure and illness is available, and the temporally related symptoms are consistent with the known toxicology of the pesticide.

Suspicious: Insufficient toxicological information is available to determine whether a causal relationship exists between the pesticide exposure and the health effects.

Unlikely: The relationship between the reported exposure and illness is not consistent with the known toxicology of the pesticide.

Insufficient Information: Insufficient documentation was obtained about the exposure or health effects to determine whether the health effects were related to a pesticide exposure.

Not a case: A person was reported to a State surveillance system due to an alleged exposure, but was asymptomatic, or it was determined that health effects were due to a condition other than a pesticide exposure. States may choose to create a subset of the *not a case* category to track asymptomatic persons exposed to pesticides.

Once a case has been classified, a determination of illness/injury severity can be performed using the severity index provided in Appendix E. Severity is assigned only to cases reported to NPHSS.

7.4 COMMUNICATION OF FINDINGS AND RECOMMENDATIONS

PPSPs should aggregate individual case data to describe the magnitude and distribution of pesticide illness and injury, develop and target prevention messages, and develop policy. However, more immediate feedback to reporters (that is, to HCPs and other sources of case reports) is critical for maintaining reporting to the surveillance program and ensuring that this very teachable moment is used to deliver prevention information. Some programs send a routine letter to providers to thank them for reporting. In the case of nonreporting providers, the PPSP can send notification to the provider indicating that the PPSP is investigating a poisoning report involving the provider's patient. Several PPSPs send a letter to providers when a case is closed, providing a brief summary of findings and the epidemiologic case classification. Another useful

gesture is to provide a copy of *Recognition and Management of Pesticide Poisonings* [Reigart and Roberts 1999].

All site inspections should result in a written report of findings provided to the affected person(s), and the employer or third party responsible for the pesticide application. In the case of worksite inspections, a brief summary report may be provided to all interviewed workers. This report should clearly communicate any recommendations, including those for IPM, product substitution, use of PPE, and training or engineering controls. In some situations, worker

representatives (e.g., union or advocacy organizations) are involved. These worker representatives should be given a copy of the written report, as they can serve as another venue for making sure workers receive and understand inspection findings. Care should be taken to make sure confidential information is excluded from reports sent to affected persons, workers, employers, and other third parties. Follow-up to determine whether recommendations are adopted should be conducted after an appropriate time interval. Follow-up may be conducted by mail, telephone, or a site visit, especially if recommendations included engineering controls.