

STANDARDIZED VARIABLES FOR STATE SURVEILLANCE OF  
PESTICIDE-RELATED ILLNESS AND INJURY

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## STANDARDIZED VARIABLES FOR STATE SURVEILLANCE OF PESTICIDE-RELATED ILLNESS AND INJURY

This document contains a standardized set of variables for pesticide-related illness and injury. These standardized variables were developed through a collaboration that included experts from federal agencies (NIOSH, US EPA, NCEH), non-federal agencies (CSTE, AOEC) and state health departments or other state designees. The variables indicated as core variables for this condition are required from all NIOSH-funded surveillance programs. However, states are encouraged to provide data for all of the variables. The NIOSH core variable name is provided in bold, followed by the variable name in the SPIDER database system shown in parentheses. The data is best managed with a relational database structure. See the SPIDER Technical Manual for an example of database design.

The variable formats conform to CDC recommendations and to maintain consistency with available national data useful for rate calculation and comparisons (e.g., data collected by the Bureau of Labor Statistics, the National Center for Health Statistics, and the Bureau of the Census). Note that the recommended variable type (e.g. numeric, character) is included in this document.

Comments follow each variable, which explain the intended use of the variable. The comments also describe the discussion with state and federal agency partners during the development of the variables and coding schemes. Additional detail and clarification are available in the appendices that include a set of frequently asked questions (FAQ) document.

Some states choose not to collect information on cases associated with exposures to disinfectants. However, the variables are designed to allow this information to be captured, although these cases may not be routinely reported to the national surveillance system. To obtain more information, or the most current version of this document contact:

Geoffrey M. Calvert, MD, MPH, FACP  
NIOSH/DSHEFS, MS R17  
4676 Columbia Parkway  
Cincinnati, OH 45226  
Telephone: 513-841-4448  
email: jac6@cdc.gov

### **ADMINISTRATIVE AND DEMOGRAPHIC DATA**

**STATE** (CEVENTSTATE)  
Definition: Unique identifier for reporting state/territory  
Width: 2  
Type: Character  
Core: Yes  
FAQ: B.1. (See Appendix C)  
Coding: 2-letter postal code for the state or territory  
Comment: Postal coding is used for ease of the reporting states.

**COUNTY** (CEVENTFIPS)  
Definition: Unique identifier for county where the exposure event occurred  
Width: 3  
Type: Character  
Core: Yes  
FAQ:  
Coding: FIPS or other state designated coding system  
Comment: This variable provides information on where events are occurring, and permits identification of clusters along state border areas. The FIPS (Federal Information Processing Standards codes issued by the National Bureau of Standards) is recommended since it conforms to CDC recommendations and enables comparison with census data. If states are currently using other systems, it is suggested that they provide the coding schemes to CDC to allow examination of the geographic distribution of cases. States are strongly encouraged to use FIPS coding. Some states do not collect



the zip code for the event location so the county was determined to be the best variable to use. There are confidentiality concerns with this variable when there are few pesticide poisonings in a sparsely populated county. It might be possible for specific individuals to be identified in those instances. This problem can be resolved if information is only sent to NIOSH on an annual basis, and states have the option to send data for this variable only if the cell size is >3.

**STATERES** (CEXPOSTATE)  
Definition: Unique identifier for the state/territory where the individual resided at the time of exposure  
Width: 2  
Type: Character  
Core: Yes  
FAQ: B.1. (See Appendix C)  
Coding: 2-letter postal code for the state or territory. If this is unknown code as "XX".  
Comment: Postal coding is used for ease of the reporting states. This variable was accepted without discussion.

**COUNTYRES** (CEXPOFIPS)  
Definition: County where the individual resided at the time of exposure.  
Width: 3  
Type: Character  
Core: Yes  
FAQ:  
Coding: FIPS or other state designated coding system  
Comment: Code the current county of residence at the time of exposure. For migrant or seasonal workers code the county where they are living at the time of exposure, **not** a permanent residence. This variable will help provide information on any clustering of exposed population on the basis of residence. The FIPS (Federal information Process Standards codes issued by the National Bureau of Standards) is recommended since it conforms to CDC recommendations and enables comparison with census data. If states are currently using other systems than it is suggested that they provide the coding schemes to CDC. This will allow states and others to examine geographic distribution of cases. States are strongly encouraged to use FIPS coding. The greatest concern with this variable related to issues of confidentiality when there are few pesticide poisonings in a county with few residents. It might be possible for specific individuals to be identified in those instances. The concern is that if states report information to NIOSH even if they only report cells with greater than three cases, NIOSH may be required to release more specific information if it is requested. This problem can be resolved if information is only sent to NIOSH on an annual basis. States may then choose to send data for this variable if cell size is >3.

**COUNTER\_ID** (CEXPID)  
Definition: Identifier for the record in the state system that will be used in the aggregated dataset  
Width: 8  
Type: Numeric  
Core: Yes  
FAQ:  
Coding: This number should be right aligned and automatically assigned through form numbering or the counter in the state database system.  
Comment: Each poisoned individual in a given exposure event should be assigned a unique identification number that is automatically assigned by the data system. The same individual could have several unique **COUNTER\_IDs** if the individual was poisoned in several different exposure events (tracked by **EVENT**). The data system can also contain an identifier that tracks unique individuals although this is not required within the standard variable format. The issue of how to assign **COUNTER\_ID** when an individual has multiple abnormal cholinesterase test results from multiple days remains to be determined.

<b>EVENTID</b>	(CEVENTID )
Definition:	Unique identifier for reported exposure event/location
Width:	8
Type:	Character
Core:	Yes
FAQ:	
Coding:	As specified by surveillance system
Comment:	Needed to identify multiple cases associated with a single exposure event/location.
<b>DATEEXPO</b>	(TFIRSTEXP)
Definition:	Date of exposure, or when the injury occurred
Width:	8
Type:	Date
Core:	Yes (see comment)
FAQ:	
Coding:	YYYYMMDD format
Comment:	Enter level of information available, leaving missing information blank. Date will be truncated at earliest missing numeral. At least one of the variables DATEEXPO, DATONSET, or DATELAB must be completed with a valid date for inclusion in the national aggregated data.
<b>DATONSET</b>	(TONSET)
Definition:	Date of symptom onset as documented in the medical record or by self-report.
Width:	8
Type:	Date
Core:	Yes (see comment)
FAQ:	
Coding:	YYYYMMDD format
Comment:	Enter level of information available, leaving missing information blank. Date will be truncated at earliest missing numeral. If system does not allow incomplete dates, then leave blank. At least one of the variables DATEEXPO, DATONSET or DATELAB must be completed with a valid date for inclusion in the national aggregated data.
<b>DATELAB</b>	(DTESTDATE)
Definition:	Date of laboratory analysis for laboratory based reports
Width:	8
Type:	Date
Core:	Yes (see comment)
FAQ:	
Coding:	YYYYMMDD format
Comment:	Enter level of information available, leaving missing information blank. Date will be truncated at earliest missing numeral. If system does not allow incomplete dates, then leave blank. This variable should describe the date of analysis, which triggered report (e.g. cholinesterase, alkyl phosphate or other analysis). At least one of the variables DATEEXPO, DATONSET, or DATELAB must be completed with a valid date for inclusion in the national aggregated data.

**DATEREPT** (DREPORT)  
 Definition: Date report received by state agency  
 Width: 8  
 Type: Date  
 Core: Yes (see comment)  
 FAQ:  
 Coding: YYYYMMDD format  
 Comment: If multiple reports are received for a given individual and event, record the date of the first report to the surveillance system. Enter level of information available, leaving missing information blank. Date will be truncated at earliest missing numeral. If system does not allow incomplete dates, then leave blank.

**DATEOTH** (DOTHER)  
 Definition: Other date that the state agency desires to track.  
 Width: 8  
 Type: Date  
 Core: No  
 FAQ:  
 Coding: YYYYMMDD format  
 Comment: This allows tracking of other dates pertinent to the case that are not as commonly recorded but if available provide important information \related to the case. Describe what the data in this field represents in the DATECOMM narrative.

**DATECOMM** (DATENARR)  
 Definition: Comments to clarify information provided in the six date fields above.  
 Width: 125  
 Type: Character  
 Core: Yes (see comment)  
 FAQ:  
 Coding: Literal narrative that describes the chronology of events or notes any clarification of data entered in the various date fields.  
 Comment: This field will be used to interpret information related to the date of report, exposure, onset, laboratory analysis and other date information provided. If the variable DATEOTH is use than an explanation of the type of date must be provided here.

**REPSRCE1** (CSRC1)  
 Definition: Ascertainment source for initial case report. (If multiple reports are received this variable should code the source of the first report received by the surveillance system.)  
 Width: 2  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 01 = physician report  
 02 = poison control center  
 03 = other health care provider report (including emergency room or hospital report)  
 04 = laboratory report  
 05 = death certificate or medical examiner's report  
 06 = report or referral from governmental agency  
 07 = obituary/news report  
 08= ascertainment through Workers' Compensation  
 09 = self-report  
 10 = co-worker report  
 11 = friend or relative report  
 12 = identified during site visit  
 13 = worker representative (e.g., union, lawyer / legal services/other advocate)  
 14 = medical record review (clinic or hospital record review performed by surveillance staff)  
 15 = employer

21 = Agricultural nurse (refers specifically to nurses participating in a NIOSH funded Occupational Nurse in Agriculture project.)  
97 = state health department  
98 = other (not captured in any code category listed)  
99 = unknown

**Comment:** The use of this variable will aid in evaluation of the surveillance systems. The coding for this variable has been condensed from earlier versions. States may choose to collect more detailed information for this variable by adding an additional column on the right. This third column should be used to code subcategories of the main category coded in the first two columns. (E.g. If there are 3 poison centers in a state the codes "021", "022" and "023" may be used to code for the specific poison centers allowing the state surveillance program to track reporting from each center; similarly a state might code ER reports as "031", nurse practitioners as "032", etc.). This variable will be truncated at two columns when data is aggregated.

**REPSRCE2**

(CSRC2)

**Definition:** Additional ascertainment source for case report. (If multiple reports are received this variable should code the source of the second report received by the surveillance system.)

**Width:** 2  
**Core:** No  
**FAQ:**  
**Type:** Character  
**Coding:** Same as REPSRCE1

**REPSRCE3**

(CSRC3)

**Definition:** Additional ascertainment source for case report. (If multiple reports are received this variable should code the source of the third report received by the surveillance system.)

**Width:** 2  
**Type:** Character  
**Coding:** Same as REPSRCE1

**SEX**

(CCASESEX)

**Definition:** Sex of disease or injury case

**Width:** 1  
**Core:** Yes  
**FAQ:**  
**Type:** Character  
**Coding:** M= Male  
F = Female  
O = Other  
U= Unknown/not stated

**Comment:** This is the core variable format currently specified by CDC. Hermaphrodites and transsexuals should be coded as "Other".

**DOB** (DCASEDOB)  
 Definition: Year, month, day of birth.  
 Width: 8  
 Type: Date  
 Core: No  
 FAQ:  
 Coding: YYYYMMDD format  
 Comment: This is the core variable format currently specified by CDC. If birthdate is not available, an estimated birthdate should be created from the individual's age. There are no current guidelines for dealing with missing data other than leaving missing data as blank. Until standard guidelines are developed the following guidelines may be used. Cases for which both date of birth and age are missing will not be accepted into the surveillance system. The mid-point for the unknown component of the birthdate should be used for estimating date of birthdate. For example an individual known only to be born in 1933 should be coded as "19330701". If the individual is known to have been born in April of 1933 the birthdate should be coded as "19330415". If DOB is missing for children less than six months old, the date of birth field should be left blank since estimated date of birth has the potential for introducing a large degree of error.

**AGE** (CCASEAGE)  
 Definition: Age in years  
 Width: 5  
 Type: Numeric with one decimal place  
 Core: Yes  
 FAQ:  
 Coding: Numeric. For individuals less than 3 years old, if age is reported in months, use decimals as follows:

1 month -.1	7 months -.6
2 months -.2	8 months -.7
3 months -.3	9 months -.8
4 months -.3	10 months -.8
5 months -.4	11 months -.9
6 months -.5	

Comment: "AGE" will be important for evaluating cases and developing intervention strategies. This variable underwent a great deal of discussion. There was concern that if age is permitted the individuals collecting data will not bother to obtain birthdates. Due to the nature of this condition and the difficulties in tracking migrant agricultural workers who may not seek medical attention it was decided that age would be an accepted variable. If age is a calculated field, the following hierarchy should be used to determine age:

- date of birth and date of exposure
- date of birth and date of illness onset
- date of birth and date of report

The current form for this variable does not match the CDC recommended format for age. The CDC recommended format includes a field for age and a field for age type. The CDC approach was discussed at length by the states currently conducting surveillance and was rejected as too cumbersome.

**HISPANIC** (CCASEHISP)  
 Definition: Indicator for self identified Hispanic ethnicity.  
 Width: 1  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: 1 =Yes

2 = No  
9 = Unknown  
Comment: This is the variable format currently specified by CDC. Ethnicity reported in this system should be the self-identified ethnicity of the individual determined during case follow-up. If self-identified ethnicity is not available this variable should be coded as unknown

**RACE** (CCASERACE)  
Definition: Self-described race of reported individual  
Width: 1  
Type: Character  
Core: Yes  
FAQ:  
Coding: 1 = American Indian, Alaskan Native  
2 = Asian or Pacific Islander  
3 = Black  
5 = White  
6 = Mixed Race  
8 = Other - Use if person volunteers a category not described in the codes above or if an individual self-identifies as 'Brown', and does not indicate 'mixed Race'. (Note that this may apply to Hispanic individuals who do not consider themselves Caucasian or mixed race.)  
9 = Unknown  
Comment: This is the core variable format specified by CDC when this coding project was initiated. Code as unknown if self-identified information is not available. The code for "Mixed Race" was added based upon the request for such a variable. There may be new suggested guidelines for this variable in the future from CDC at which time this coding scheme may be reevaluated. Coding this as "9=Unknown" will not exclude the record from the national aggregated data.

## **INDUSTRY/OCCUPATION DATA**

**WORKREL** (CWORKREL)  
Definition: Indicates causal relationship between illness/injury and case's work  
Width: 1  
Type: Character  
Core: Yes  
FAQ:  
Coding: 1 = yes  
2 = possibly  
3 = no  
4 = unknown  
5 = N/A  
Comment: Indication of work-relatedness is essential for occupational health surveillance systems. If coded as "2", possibly work-related' an explanation must be provided in the narrative OCCNAR field.  
**Operational guidelines for the determination of work-relatedness are included in Appendix A.**

**OCCTITL** (COCCUP)  
Definition: Occupation/job title at time of injury or exposure. Reported only for individuals with work-related exposures.  
Width: 65  
Type: Character  
Core: Yes  
FAQ:  
Coding: Narrative  
Comment: This narrative, which is analogous to that contained in the 1990 U.S. Census, should address the following:

*What was this person's occupation or job title? ( for example: registered nurse, personnel manager, farm manager - vegetable row crops, farm worker-fruit orchard, nursery worker - flower bulb sorter, nursery worker-pruner-general laborer, gardener, potato sorter, dog groomer, pest control- applicator trainee, high school teacher).*

**OCCCODE** (CCOC)  
Definition: Numeric 1990 US Census code for occupation described in OCCTITL  
Width: 3  
Type: Numeric  
Core: Yes  
FAQ:  
Coding: 1990 U.S. Census Occupation Code  
Comment: U.S. Census Occupation Codes are used throughout the statistical community and have been adopted by NIOSH and NCHS for use in generating occupational health statistics. There was some discussion of whether occupational coding other than Census coding would be more appropriate. This question was raised due to the limited codes available in the census system for agricultural occupations. Census coding is still included as the preferred coding in this revision due to the availability of denominator data.

**IND** (CINDNARR)  
Definition: Industry at time of injury or exposure  
Width: 100  
Type: Character  
Core: Yes  
FAQ:  
Coding: Narrative  
Comment: This narrative, which is analogous to that contained in the 1990 U.S. Census, should address the following:

*For what kind of business or industry did this person work? If in the Armed Forces, what Branch? Describe the activity at location where employed (for example: hospital, bank, farm - crop production, flower bulb raising, nursery stock-ornamental plant production, municipal golf course, vegetable packing house, dog grooming shop, pest control service, high school)*

**INDSIC** (CSIC)  
Definition: SIC Code for industry described in IND  
Width: 4  
Type: Numeric  
Core: Yes, see comments  
FAQ:  
Coding: 1987 Standard Industrial Classification (SIC) code  
Comment: The SIC is the Office of Management and Budget's coding system for type of industry and is the preferred industry classification scheme for NIOSH surveillance systems. Each surveillance system should take steps to insure (insofar as possible) that SIC codes for workplaces identified through case follow-back are assigned in a comparable manner in all participating states. Census Occupation coding rules require use of the Census Industry Code, which is easily converted from the SIC code (using the "Instruction Manual Part 19" pages 79-81[Hyattsville, MD: US DHHS;1997]). **At least one the three coding systems for industry must be used for all occupational case reports.**

**INDCIC** (CCIC)  
Definition: Census Industry Code (1990 Census is the standard currently in use)  
Definition: 1990 Census Industry Classification System industry code  
Width: 3  
Type: Character  
Core: Yes, see comments  
FAQ:

Coding: See the Alphabetical Index of Industries and Occupations for U.S. Census 1990.  
Comment: This is the industry code provided by the SOIC program or a trained coder. (The SOIC program can be obtained from NIOSH.) NIOSH prefers that all states provide this code. **At least one the three coding systems for industry must be used for all occupational case reports.**

**NAICS** (CNAICS)

Definition: North American Industry Classification System industry code

Width: 6

Type: Character

Core: Yes, see comments

FAQ:

Coding: See NAICS manual, United States, 1997. Office of Management and Budget.

Comment: This system is the most recent form of industry coding shared by the USA, Canada and Mexico. It is a production-oriented, process-based system for coding industry. Some states may choose to continue using a combination of SIC and NAICS coding for particular industries. Not all SIC codes can be easily derived from NAICS codes. **At least one the three coding systems for industry must be used for all occupational case reports.**

**OCCNAR** (COCCNAR)

Definition: Describes additional information about the occupation, industry or work-relatedness of the exposure not covered in variables in this section.

Width: 125

Type: Character

Core: No, see comments.

FAQ:

Coding: Literal narrative, describing anything that would impact on interpreting the coded information. If WORKREL is coded as "2, possibly work-related" an explanation must be provided here. Indicate circumstances that complicate decision regarding whether the exposure was work related.

Comment: This narrative can be as short as needed, and does not need to be written in sentence form.

**EXPOSURE DESCRIPTIONS**

The following variables characterize the exposure. States are also asked to complete a short narrative that adds pertinent information and describes any unusual circumstances associated with the exposure.

**TYPE of EXPOSURE**

The following five variables describe the nature of the exposure. More than one of these variables may be coded as "1=yes" if the individual was exposed to the pesticide via more than one mode of exposure. However, efforts should be made to only code the type(s) of exposure that are most likely linked to the illness and injury. It does not matter if the case involves a misapplication; code the type of exposure according to the guidelines below.



**DRIFT** (LDRIFT)  
Definition: Indicates whether the individual was exposed via the movement of pesticides away from the treatment site. The pesticide spray, mist, fumes, or odor are carried from the target site by air.

Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2= no

Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if **TYPEUNK** is coded as "1". Pesticide material blown back onto the applicator during the application process is coded as **SPRAY**.

**TARGETED** (LTARGETED)  
Definition: The individual was exposed to an application of a pesticide material released at the target site, and not carried from the target site by air. The pesticide may be any formulation type (granular dust, aerosol, liquid, etc.). Hand application by any method is included as well as the use of all forms of application equipment. Exposure to the material can be by direct projection, ricochet, blow back by wind onto the applicator during the application process, or airborne exposure to anyone moving through an area being actively treated.

Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2= no

Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if **TYPEUNK** is coded as "1". Note that **TARGETED** includes: 1) situations where the target site may be a misapplication or an error (e.g., spraying the wrong field, accidentally spraying oneself with an insecticide); 2) situations where an individual was exposed to fumes while mixing or loading pesticides, including mixing bleach and ammonia (which produces chloramine gas); and 3) situations where an individual was exposed while sanitizing dishes or disinfecting swimming pools. Finally, an earlier version of this variable was called **SPRAY**, but use of **SPRAY** was discontinued on January 1, 2006.

**SPRAY** (LSPRAY)  
Definition: Individual exposed to pesticide material propelled by the application or mixing/loading equipment. The pesticide may be any formulation type (granular dust, aerosol, liquid, etc.). Exposure to the material can be by direct projection or by ricochet. Note that pesticide material blown back onto the applicator during the application process or exposure to the applicator while moving through the treated area is coded as **SPRAY**.

Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2= no

Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if **TYPEUNK** is coded as "1".  
NOTE: This variable is replaced by **TARGETED** effective January 1, 2006, and therefore should be omitted for data collected after that date.

**INDOORAIR** (LINDOORAIR)  
Definition: The individual was exposed via indoor air contamination (this includes residential, commercial and greenhouse indoor air).  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if **TYPEUNK** is coded as "1".

**SURFACE** (LSURFACE)  
Definition: The individual was exposed via contact with pesticide residues on treated surface (plant material, carpets, treated animal) or entry into an outdoor treated area. Any contact or secondary contact with residues is coded as *SURFACE*. (An example of secondary contact is person touches treated plant, and then touches self.) The treated surface may include contact with the individual's own clothing or body part that was treated (e.g. applied pesticide spray to back of forearms and hands, and then rubbed eyes with back of hand.)  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if **TYPEUNK** is coded as "1".

**LEAKSPILL** (LLEAKSPILL)  
Definition: The individual was exposed to a leak or spill of pesticide material from any cause. The leak or spill could have occurred at the time of exposure (e.g., an applicator exposed to pesticides from a leaking backpack sprayer) or prior to the exposure (e.g., emergency workers exposed to a pesticide spilled during a truck accident; the accident occurred hours before the exposure).  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if **TYPEUNK** is coded as "1". Use of this variable began on January 1, 2006. Prior to this date, the data captured by this variable were included in the CONTACT variable that was discontinued effective January 1, 2006.

**CONTACT** (LCONTACT)  
Definition: The individual was exposed via other direct contact not included in SPRAY or SURFACE. This includes: 1) Contact made during an application or mixing/loading operation where the material is not propelled by the equipment; 2) Expected direct contact during use (e.g. washing dishes in a disinfectant solution); 3) Leaks, spills, etc. not related to an application, including during emergency response; 4) handling a pesticide delivery device (e.g., dispenser, trap, pheromone strip).  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes

2 = no  
Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if **TYPEUNK** is coded as "1".  
NOTE: This variable is replaced by LEAKSPILL and TYPEOTH effective January 1, 2006, and therefore should be omitted for data collected after that date.

**TYPEOTH** (LOTHER)  
Definition: Indicates if the type of exposure does not fit into any of the categories of exposure described in the previous five variables.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: This variable must be coded as "2" if **TYPEUNK** is coded as "1". Describe the type of exposure in **EXPOCOMM**.

**TYPEUNK** (LTYPEUNK)  
Definition: Indicates if the type of exposure is unknown.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if any of the five preceding variables are coded as "1". Try to avoid unknowns. For example, ask "How do you think you were exposed?" during case interviews. However, if it is truly unknown how the exposure occurred, then code as unknown. Do not assume, speculate or opine.

### **ROUTE of EXPOSURE**

The following six variables describe the route(s) of exposure

**DERMAL** (LDERMAL)  
Definition: Indicates whether the individual was exposed to the pesticide by the dermal route of exposure.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. If it is unclear or unknown whether there was dermal exposure code as "2". This variable must be coded as "2" if **ROUTEUNK** is coded as "1".

**INHALE** (LINHALE)  
Definition: Indicates whether the individual was exposed to the pesticide by inhalation.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. If it is unclear or unknown whether there was an inhalation exposure code as "2". This variable must be coded as "2" if **ROUTEUNK** is coded as "1".

**INGESTION** (LINGESTION)  
Definition: Indicates whether the individual ingested pesticide.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. If it is unclear or unknown whether the individual ingested pesticide code as "2". This variable must be coded as "2" if **ROUTEUNK** is coded as "1".

**INJECTION** (LINJECTION)  
Definition: Indicates whether the individual was exposed to the pesticide by injection.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. If it is unclear or unknown whether there was dermal exposure code as "2". This variable must be coded as "2" if **ROUTEUNK** is coded as "1". This code should be used to indicate purposeful or accidental injection of pesticide via syringe or application equipment designed to inject pesticide into plants, animals or wood.

**OCULAR** (LOCCULAR)  
Definition: Indicates whether the individual was exposed to the pesticide by the splash, spill or spray to the eye.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes  
2 = no  
Comment: The default should be set to "2" for this variable. If it is unclear or unknown whether ocular exposure occurred code as "2". This variable must be coded as "2" if **ROUTEUNK** is coded as "1".

**ROUTEUNK** (LROUTEUNK)  
Definition: Indicates if the type of exposure is unknown.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = yes

2= no  
Comment: The default should be set to "2" for this variable. This variable must be coded as "2" if any of the five preceding variables are coded as "1"

**INTNEXPO**

(CINTENT)

Definition: Indicates whether the pesticide exposure was intentional or unintentional.

Width: 1

Type: Character

Core: No

FAQ:

Coding: 1 = Yes, suspected intentional

2 = No, unintentional

9 = Unknown

Comment: The unknown category should be used primarily for ingestion cases where the intention of the individual is unclear. If the intention is not clearly documented it should be coded as unknown. This also applies to deaths where the circumstances are unclear with regards to the intent of the deceased individual. Illness caused by ingesting commercial food crops or products contaminated with pesticides should be coded as unintentional unless there is specific evidence of product tampering.

**ACTEXPIND**

(CACTIVITY)

Definition: Activity of exposed individual at time of exposure.

Width: 2

Type: Character

Core: Yes

FAQ: B.5. (See Appendix C)

Coding: 01 = applying pesticide

02 = mixing/loading pesticide

03 = transport or disposal of pesticide Transport includes activities involved with movement of pesticide or pesticide waste by vehicle or hand during the time interval from after the product is loaded (into application equipment, or truck, railcar or other transport vehicle) until it reaches the destination for unloading, application, or disposal. Note that activities involving unloading, stocking retail shelves, etc. fall into code 08. The activity of loading pesticides falls into code 02.

04 = repair or maintenance of pesticide application equipment

05 = any combination of activities 01-04

06 = involved in manufacture or formulation of pesticide

07= emergency response

08 = routine work activity not involved with pesticide application (includes exposure to field residue)

09 = routine indoor living activities not involved with pesticide application

10 = routine outdoor living activities not involved with pesticide application

11 = application to self or another human of a pesticide intended to be used on human skin hair or clothing (code added effective 1/1/2006. Prior to that date, guidance indicated that these exposures should be coded as normal working or living activities [i.e. codes 08 or 09].)

98 = not applicable

99 = unknown

Comment: This variable will assist states and other users of the data in determining whether pesticide-related illness is associated with handling pesticide products, treated material, or due to incidental contact not directly associated with the actual application of the pesticide. This information will be useful in developing intervention strategies.

**PPE** (CPPE)  
 Definition: Describes whether personal protective equipment was used by the exposed individual, and whether the surveillance system investigation indicates PPE was required by rule or law.  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ: B.9. (See Appendix C)  
 Coding: 1 = PPE worn and all or some PPE worn appeared to be required by label or rule  
 2 = PPE worn by choice, apparently none was required by label or rule  
 3 = PPE worn, undetermined if required by label or rule  
 4 = PPE not worn, although some PPE appeared to be required by rule or law  
 5 = PPE not worn, undetermined if required by label or rule  
 6 = No, PPE not worn, and PPE did not appear to be required by rule or law  
 8 = Not applicable  
 9 = Unknown

Comment: This and the related variables will allow tracking of information on factors that may contribute to exposure and may be useful for developing intervention strategies. The language of this variable is structured to acknowledge that the judgment of whether PPE would be required is based upon the surveillance program investigation, and may not reflect the assessment by an enforcement agency.

Code as "not applicable" for all purposeful exposures, and for accidental and incidental exposures where an individual would not have expected an exposure and therefore PPE is not a consideration. This includes all purposeful and accidental ingestion exposures, and bystander exposures during spills or applications.

State programs that do not wish to record judgments regarding whether PPE was required should use the codes "3" and "5". Comments that will clarify whether the PPE appeared to be appropriate, worn correctly, maintained appropriately, etc. should be included in **EXPOCOMM**.

**PPE 1-9**

Definition: The following PPE variables describe the types of PPE used by the exposed individual at time of exposure if **PPE** is coded as "1", "2" or "3".  
 Width: 1  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: 1 = Yes  
 2 = No  
 8 = Not applicable  
 9 = Unknown

- |             |              |   |
|-------------|--------------|---|
| <b>PPE1</b> | (CRESP_SA)   | Respirator (Supplied air) (CRESP_SA)                          |
| <b>PPE2</b> | (CRESP)      | Respirator (Half Face, Full Face, PAPR)                       |
| <b>PPE3</b> | (CDUSTMASK)  | Dust mask/disposable respirator)                              |
| <b>PPE4</b> | (CBOOTS)     | Rubber/chemically resistant boots                             |
| <b>PPE5</b> | (CNATGLOVES) | Gloves (Cloth or Leather)                                     |
| <b>PPE6</b> | (CSYNGLOVES) | Gloves (Rubber or Synthetic)                                  |
| <b>PPE7</b> | (CCGOGGLES)  | Chemical Goggles/ Faceshield                                  |
| <b>PPE8</b> | (CCLOTHING)  | Chemically resistant clothing (rubber apron, Tyvek, raingear) |
| <b>PPE9</b> | (CENGCONT)   | Engineering Controls  |

Comment: If **PPE** is coded as "8=not applicable" or "9=unknown" then all of the variables **PPE1-9** should be coded in the same manner as **PPE**.

**EQUIPMEN****(EQUIPMENT)**

**Definition:** Describes the type of equipment or application method used for the application. This should be coded regardless of whether it was used by the exposed individual or another individual who performed the pesticide application.

**Width:** 2

**Type:** Character

**Core:** No

**FAQ:**

**Coding:**

- 01 = aerial application equipment (fixed wing or helicopter)
- 02 = chemigation (application through irrigation system)
- 03 = pressurized can or aerosol bomb - This includes pesticides that are combined with an inert compressed gas propellant in a disposable or refillable self-dispensing container. The container may release the pesticide as a spray, mist or fog. Aerosol foggers or bombs are single use disposable units designed to for total release of the contents in a single use. Other aerosol cans have triggers that permit intermittent use of the product. These products are available for use by homeowners as well as professional pesticide applicators. Professional applicators may use additional hoses and wands with the pressurized can.
- 04 = aerosol generator or fogger (thermal or cold) - Includes equipment designed to disperse pesticide as small airborne droplets into confined spaces such as greenhouses and warehouses or for outdoor control of mosquitoes and other public health or nuisance insects. These units are available as hand carried or backpack ultra-low volume (ULV) cold or thermal foggers and the more commonly used vehicle mounted cold or thermal foggers. Greenhouse applications may include stationary heated units for thermal fogging of the greenhouse.
- 05 = soil injector (Any mechanism used to inject fumigant or other pesticide material into soil, e.g. chisel cultivator, blade or shovel, sweep cultivator shovels, planter shoes, plow. This excludes any cultivator used to incorporate *surface applied* fumigant into soil). Soil injectors usually have a tube down the back of the shank that places the pesticide a foot or more into the soil.
- 06 = high pressure fumigator (this includes high pressure fumigant applications *other than* soil injection) - metered application from pressurized gas cylinder.
- 07 = handheld granular or dust applicator (squeeze bulb, bellows, tube, shaker, sliding tube, or fan powered by a hand crank). This excludes power dusters, which should be coded under sprayers.
- 08 = spray line, hand held - this includes hose end sprayers, hand held lines attached to powered spray tanks.
- 09 = sprayer, backpack (this includes both powered and manual backpack spray units)
- 10 = trigger pump, push-pull, or compressed air hand sprayer - these are handheld units used for spot spraying.  
*Trigger pumps* are usually plastic bottles with a built in hand trigger to disperse liquid pesticide. Homeowners and professional applicators use these for indoor plants, pests and small areas.  
*Push-pull sprayers* are operated by a hand operated plunger that uses air and vacuum pressure to expel pesticide from a small (typically less than 1 quart) attached tank unit.  
*Compressed air hand sprayers* - these are small volume (1- 5 gallon) tanks with manual pumps
- 11 = ground sprayer not otherwise specified -includes sprayers attached to or pulled by tractor or ATV. Includes common low-pressure boom sprayer applications, electrostatic sprayers, ULV sprayers and high pressure hydraulic spraying such as airblast sprayers.
- 12 = manual placement (e.g. gopher bomb, bait station, pellets, hand toss of briquette, placement of fumigant pellet packs), this also should be used to code for circumstances where pesticide is poured directly onto a target surface from a container.
- 13 = dip tank or tray (includes dipping of animals, produce, bulbs, plant material etc.)
- 14 = more than one type of application equipment used
- 15 = other, this includes all other equipment such as non-handheld mechanical granule applicators, etc.
- 98 = not applicable

99 = Unknown

Comment: Capturing the specifics of application equipment used is difficult unless a field investigation is conducted. The categories selected for coding included those types of equipment that would be easily recognized by descriptions and which were judged important for developing possible intervention strategies. For more detailed descriptions and pictures of equipment a good reference is *Chapter 10 Pesticide Application Equipment*, In: *The Safe and Effective Use of Pesticides*, University of California Statewide Integrated Pest Management Project, Division of Agriculture and Natural Resources, Publication 3324, Oakland, CA, 1988, p. 273-322.

**APPLICTR**

(CAPPSUP)

Definition: Indicates the licensing and supervision of the individual who performed the application.

Width: 1

Type: Character

Core: No

FAQ: B.8. (See Appendix C)

Coding: 1 = Licensed applicator  
2 = Unlicensed individual, under constant direct (onsite) supervision of licensed applicator during application  
3 = Unlicensed individual, under indirect or intermittent supervision of licensed applicator during application - This code refers to individuals who are operating under the loose supervision of a licensed applicator who may be at a different location. These individuals may be trainees, or workers who have been designated to apply pesticides by their employer.  
4 = Unlicensed, adult not under supervision of licensed applicator during application - Use this code for a homeowner applying pesticides. An unlicensed individual performing an application without supervision of a licensed applicator as an incidental part of their job should also be coded "4". (For example: an apartment maintenance worker asked to spray the grounds or surfaces in an apartment complex.)  
5 = Unlicensed child (16 years old or younger) not under supervision of licensed applicator during application (this includes situations where a license may not be required)  
8 = Not applicable  
9 = Unknown

Comment: This variable can provide important information for interventions.

**APPTARGET**

(CTARGET)

Definition: This variable describes the *target surface* for the pesticide application.

Width: 3

Type: Character

Core: No

FAQ: B.2., B.5., B.6., B.7. (See Appendix C)

Coding: 010 = landscape/ornamental (includes lawns, flower gardens, ornamental plants)  
020 = forest trees, forest lands  
031 = veterinary/livestock - Livestock includes all agricultural animals such as dairy animals, poultry, meat animals, fur and wool bearing animals.  
032 = veterinary/domestic animal  
041 = building structure - this includes applications to the building structure including wall void injection, treatment of structural building members to eradicate pests, building perimeter treatments, crack and crevice treatment as well as treatment of air conditioning systems and heating ducts. If the application involves any combination of codes "041-043" use the numerically higher code.  
042 = building surface - this includes applications to building surfaces such as spraying of carpets, flea foggers, interior area surface sprays in living/working areas other than crack and crevice. If the application involves any combination of codes "041-043" use the numerically higher code.  
043 = building space treatment - this code includes, structural applications to residences or commercial buildings using fumigants. Note that greenhouse fumigation and treatment



with thermal fogs should be coding according to the actual target crop. If the application involves any combination of codes "041-043" use the numerically higher code.

050 = undesired plant (the plant is the target pest and the only target of the application). This code should be used for spot weed control applications. Indicate the specific crop or commodity in the Exposure Narrative or the CROP variable.

060 = aquatic excluding pools (pond, stream, lake, irrigation canal, waste pond)

061 = pools (swimming pools, Jacuzzis, whirlpools, hot tubs, and fountains) [code added effective 1/1/2006]

070 = soil (preplant application to soil such as fumigation, when no crop is present) Indicate the specific crop or commodity in the Exposure Narrative or CROP variable.

080 = wood product - Includes railroad ties, utility poles and materials for fences, decks, wood landscape structures, bulwarks, pilings outdoor wood furniture pre and post consumer purchase.

100 = Fruit Crops

101 = small fruits

[ blackberry, boysenberry, dewberry, loganberry, raspberry, youngberry, blueberry cranberry, currant, elderberry, gooseberry, grapes, huckleberry, strawberry, bushberries, serviceberry, mulberry)

110 = tree fruits

111 = citrus fruits

[citron, grapefruit kumquat, lemon, lime, orange, tangelo, tangerine, other citrus hybrids, pummelo]

112= Tree Nuts

[almond, brazil nuts, cashew, chestnut, filbert (hazelnut), hickory nut, macadamia nut (bushnut), pecan, walnut, butternut, pistachio]

113 = Pome fruits

[apple, crabapple pear, quince, mayhaw (hawthorn)]

114 = Stone Fruits

[ apricot, cherry, nectarine, peach, plum, prune]

120 = Subtropical and miscellaneous fruits

[avocado, banana, coconut, date, fig, guava, mango, loquat, olive, papaya, pawpaw, persimmon, pineapple, passion fruit, pomegranate, plantain, litchee nut, kiwifruit, caprifig, acerola, ginkgo nut, mamey, surinam cherry, soursop, sugar apple (custard apple), breadfruit, pricklypear, carambola, cherimoya, longan, mamaladebox, granadilla, sapota, star apple, Japanese plum, sapodilla]

200 = Beverage crops (cocoa, coffee, tea, mint, cola, chicory)

300 = Flavoring and spice crops

[angelica, anise, balm, basil, caraway, cassia, catnip, celery, cinnamon, cloves, coriander, cumin, dill, elecampane, fennel, fenugreek, ginger, hops, horehound, horseradish, juniper, lavender, licorice, marjoram/oregano, mint/peppermint / spearmint, mustard, nutmeg, pennyroyal, pepper(black/white/ chili/(paprika type), rosemary, rue, safflower, sage, savory, sesame, bay/sweet bay, tamarind, tansy, tarragon, thyme, turmeric, vanilla, wintergreen, wormwood, allspice, poppy, chamomile, costmary, hyssop, marigold, nasturtium, woodruff, valerian]

400 = Vegetable Crops

410 = Curcubit Vegetables

[melons, gourd, cucumber, squash (all), okra, gherkin, chayote]

- 420 = Fruiting Vegetables  
 [eggplant, pepper, pimento, tomato, gooseberry, pepino, tomatillo]
- 430 = Leafy vegetables  
 [beets, celery, chicory, broccoli, brussel sprouts, cabbage, cauliflower, collards, kale, kohlrabi, corn salad, dandelion, endive (escarole), fennel, cress, artichoke, lettuce (all varieties), mustard, parsley, rhubarb, spinach, turnip, watercress, pricklypear cactus pads, grapeleaves, bamboo shoots, broccoli raab, mustard cabbage (pakchoi), chervil, roquette (arugula), dock, peppergrass]
- 440 = Root and Tuber Vegetables  
 [beets, carrot (including tops), celeriac, chive, taro, garlic, horseradish, Jerusalem artichoke, leek, onion (including green, spring and scallions), parsnip, potato, radish (all types), rutabaga, salsify, shallot, sweet potato, turnip, yam, lotus root, manioc (cassava), arrowroot, yautia, water chestnut, chufa (ground almond)]
- 450 = Seed and Pod Vegetables  
 [beans (fresh and dried all types), peas (fresh and dried all types), bean sprouts (all types), carob]
- 460 = Miscellaneous vegetables  
 [algae, seaweed, asparagus, mushrooms]
- 500 = Grains, Grasses and Fiber Crops
- 501 = Fiber crops  
 [cotton, flax, hemp, kenaf, ramie, abaca, broomcorn]
- 510 = Grasses for Forage, Fodder Hay and Silage  
 when intended use is forage, fodder hay and silage: millet, sorghum, corn, oats wheat, barley, rye, sudangrass, pasture, bermudagrass, bluegrass, timothy, rice, millet, canarygrass, grasses for bird seed
- 520 = Legumes and Related Crops for Forage, Fodder Hay and Silage  
 [when intended use is forage, fodder hay and silage: alfalfa, beans, clover, cotton, lespedeza, peanuts, peas(including vines),sugar beets (including tops), vetch, trefoil, sainfoin, soybeans, carrot tops, carob, rape, kudzu, lupine, buckwheat]
- 530 = Cereal Grain Crops  
 [barley, corn, oats, rice, rye, sorghum, wheat, millet (proso, broomcorn), triticale, wild rice, teosinte]
- 540= Sugar Crops  
 [honeycomb, sugar beet, sugarcane, sugar maple, sorghum]
- 550 = Miscellaneous Field Crops  
 [tobacco, popcorn, pyrethrum, sesame, pine nuts, grasses for seed and non-forage use]
- 600 = Oil Crops  
 [castor bean, field corn, cotton, flax, mint/ peppermint/ spearmint, peanuts, safflower, sesame, soybeans, sunflower, tung, wormseed, avocado, coconut, olive, rape, jojoba, palm]
- 601 = Application to seeds (seed treatment)
- 650 = Crops that cross categories 90-600
- 700 = Humans

- 701 = Skin and/or hair
- 702 = Clothing
- 703 = Skin and/or hair and clothing
- 800 = Bait for rodent, bird or predator
- 801 = community-wide application target (this should only be used to indicate public pest control activities aimed at eradicating or controlling, a public health, nuisance, or agricultural pest)  
Make sure to code PURPOSE and SPECPEST if this code is used. Code added effective January 1, 2003.
- 850 = Other
  - mixed crop and non-crop areas
  - mammal feeding and nesting areas (if mammals are the target pest)
  - industrial or food processing equipment
  - boats and docks antifouling treatments
  - disinfection of medical equipment, toilets, and materials in beauty and barber shops, morgues, mortuaries and funeral homes
  - other special target sites not otherwise specified
- 998 = N/A - application not involved
- 999 = unknown

**Comment:** This variable provides users with information on patterns of illness associated with particular crops, structures and other target sites for applications. This information will be useful for developing intervention strategies. The coding scheme for this variable is adapted from EPA and USDA coding. It was suggested that other coding schemes be evaluated, or that definitions be provided. There are many coding schemes for this type of information. This one was selected as it allows comparability between categories currently used to evaluate crop specific pesticide uses. Information coded in this field should be at the most specific level available.

**APPSITE**

(CEVENTSITE)

**Definition:** Location where the application or event (e.g., spill, transport accident, fire) associated with the exposure took place.

**Width:** 2

**Type:** Character

**Core:** Yes

**FAQ:**

- Coding:**
- 01-09 = Agricultural (including outbuildings other than farm residence or labor housing)
    - 01 = farm (all farms, orchard crop production facility excluding nursery, livestock and forest)
    - 02 = nursery (Include production nurseries. Note that retail nurseries, yard and garden centers are coded under 41)
    - 03 = forest
    - 04 = livestock and animal specialty production (includes all livestock production, including dairy, poultry and egg farms, horse farms, game farms, fur production farms, worm farms, pet breeding farms, apiaries and aquaculture facilities)
    - 05 = greenhouse
    - 09 = other non-production agricultural processing facility (this includes fruit and vegetable packing facilities, other post harvest processing facilities such as cotton ginning. Refer to code 32 for farm product storage facilities)
  - 10 - 19 = Private Residence (including grounds and outbuildings)
    - 10 = single family home
    - 11 = mobile home/trailer
    - 12 = multi-unit housing (apts., multi-plexes) Include duplexes and residential hotels renting rooms on a monthly basis in this category.
    - 13 = labor housing
    - 19 = Private residence, type not specified
  - 20 - 29 = Institutions

- 20 = residential institution (dorms, homeless shelters, nursing homes)
- 21 = school
- 22 = day care facility (including facility in private residence)
- 23 = prison
- 24 = hospital
- 29 = other institution
- 30 - 39 = Manufacturing
  - 30 = pesticide manufacturing/formulation facility
  - 31 = industrial facility
  - 32 = farm product warehousing and storage (grain storage elevators, cold storage facilities) [Note silos on farm or livestock production facilities should be coded under codes 01 or 04]
  - 33 = food manufacturing - includes processing of animals, fruits, grains and vegetables into food products for sale, including, slaughtering, canning, pickling, freezing, dehydrating, milling, and baking.
  - 39 = other manufacturing facility
- 40- 49 = Non-manufacturing commercial facilities
  - 40 = office/business (non-retail, non-industrial)
  - 41 = retail establishment (include yard and garden centers, florists, retail nurseries)
  - 42 = service establishment (include hotels (rented out hourly, daily or weekly), health clubs, other facilities that usually fall into service industry and are not included in other specific codes for this variable)
  - 43 = Pet care services and veterinary facilities including animal boarding facilities (horse boarding, kennels, groomers, etc., animal pounds, animal training and showing facilities) [some states may choose to include some of these in analysis of agricultural exposures based upon SIC, CIC or NAICS coding]
- 50 - 60 = Other
  - 50 = road /rail
  - 51 = right-of-way for road, rail or utility
  - 52 = park
  - 53 = golf course
  - 54 = private vehicle
  - 55 = public transportation vehicle
  - 56 = cemetery
  - 59 = other
  - 60 = emergency response vehicle
- 70= More than one site
- 98 = not applicable
- 99 = unknown

**Comment:** This variable will allow systems to determine whether the exposed individual was at the site of the event or application, and which locations are associated with events that result in exposure on and off-site. Note that exposure to individuals in a private residence that also functions as a day care facility should be coded as "22". Individuals exposed in a home office space in their own private residence should be coded with the appropriate code in the range of "10-13". All other occupational exposures linked to a business located within or attached to a private residence should be coded according to the type of business described in codes "30-49". For exposures related to pools the location of event/application should reflect where the pool (Jacuzzi, whirlpool, hot tub, or fountain) is located. For example, a pool located at an individual's home should be coded as 10 (single family home), a Jacuzzi at a health club or hotel should be coded as 42 (service establishment) and a pool located at high school should be coded as 21 (schools). An event involving exposure to a Jacuzzi or whirlpool at a medical office, such as a physical therapist's office, would be coded as 42 (service establishment).

**CASESITE** (CSITE)  
**Definition:** Description of the type of location where the exposed individual was when they were exposed.  
**Width:** 2  
**Type:** Character

Core: Yes  
 FAQ:  
 Coding: See APPSITE Codes  
 Comment: This should be coded as "98 not applicable", if the individual was located at the site of application when exposed. If the individual was at different physical location, but which is the same type as the location of application, this should be coded similarly. (Example: If a farmworker exposed at a farm location that adjoined the farm location where the actual application was performed then both **APPSITE** and **CASESITE** should be coded "01".) Note that exposure to individuals in a private residence that also functions as a day care facility should be coded as "22". Individuals exposed in a home office space in their own private residence should be coded with the appropriate code in the range of "10-13". All other occupational exposures linked to a business located within or attached to a private residence should be coded according to the type of business described in codes "30-49". This variable may allow systems to determine whether the exposed individual was at a site other than the site of the event or application, and which event locations are associated with on and off-site exposures. ". For exposures related to pools the location of event/application should reflect where the pool (Jacuzzi, whirlpool, hot tub, or fountain) is located. For example, a pool located at an individual's home should be coded as 10 (single family home), a Jacuzzi at a health club or hotel should be coded as 42 (service establishment) and a pool located at high school should be coded as 21 (schools). An event involving exposure to a Jacuzzi or whirlpool at a medical office, such as a physical therapist's office, would be coded as 42 (service establishment).

**PURPOSE** (CPURPOSE)  
 Definition: The purpose for community-wide target applications.  
 Type : Character  
 Width: 1  
 Core: Yes  
 FAQ:  
 Coding: 1 = Agricultural pest eradication  
 2 = Public health pest control or eradication  
 8 = NA  
 9 = Unknown  
 Comment: Default code should be set to '8=NA' and the variable should only be coded if APPTARGET is coded 801.

**SPECPEST** (CSPECPEST)  
 Definition: Specific pest target for community-wide target applications (code 801 under APPTARGET).  
 Type Character  
 Width 3  
 Core: Yes  
 FAQ:  
 Coding: 001 = Mosquito (use only for applications not associated with a disease outbreak, otherwise code under the disease (codes 000-099))  
 002 = West Nile virus (outbreak only)  
 003 = St. Louis Encephalitis (outbreak only)  
 004 = Western Equine Encephalitis (outbreak only)  
 005 = Dengue fever (outbreak only)  
 100 = Boll weevil  
 101 = Gypsy moth (Asian or European)  
 102 = Fruit fly (Mediterranean, Mexican, Oriental, Olive, etc.)  
 103 = Japanese Beetle  
 104 = Imported Fire Ant (Red or Black)  
 105 = Asian Longhorn Beetle  
 106 = Emerald Ash Borer  
 107 = Grain fungal diseases (e.g. black stem rust)  
 108 = Grasshopper/Mormon Cricket  
 888 = Default if state chooses not to code this variable.

996 = Multiple pests  
998 = Not applicable (APPTARGT not = 801)  
999 = Unknown

Comments: A disease outbreak is characterized by the presence of ill individuals or animals in the community at a level that meets the community's threshold for pesticide application. Other thresholds used to determine when pesticide application will occur do not constitute an 'outbreak' (i.e. monitoring data from sentinel chicken flocks, biting counts, etc.) If a pest is thought to be significant and new code is desired contact NIOSH-SENSOR Pesticide listserv to add new code. The initial default should be set to 998 until 801 is entered for the variable **APPTARGT**. Once 801 is entered under **APPTARGT**, the default for **SPECPEST** should be 888.

**CROP**

(CCROP)

Definition: This variable describes the crop or commodity involved when the crop is not the application target (see comments for clarification).

Width: 4

Type: Character

Core: No

FAQ:

Coding: (Note that specific crop coding available by using the fourth character in the field is optional)

0100 = landscape/ornamental

0120= nursery stock [ornamental plants, seedlings (including forestry), trees, flowers grown at a nursery (not retail) Note that specific crops may be coded using 0121-0199 for single crop targets]

0121 = shrubs

0122 = ornamental or shade trees

0130 = ornamental bulb, corm rhizome plants (daylilies, iris, tulips, daffodils, etc.)

0131 = alstromeria (Peruvian lily, Lily-of-the-Incas)

0132 = carnations

0133 = chrysanthemums

0134 = orchids

0135 = poinsettias

0136 = roses

0139 = other ornamental plants

0200 = forest trees, forest lands

0201 = forest trees

0202 = forest lands

0203 = Christmas trees

0204 = combination of 0201 & 0202

0310 = veterinary/livestock

0311 = cattle

0312 = goats

0313 = swine (hogs, pigs)

0314 = sheep

0315 = poultry (chickens, ducks, geese, turkeys, ostrich, etc.)

0316 = dairy (cows, goats other mammals used for milk production)

0318 = other farm livestock not listed

0319 = combination of livestock

1000 = Fruit Crops

1010 = Small fruits

1011 = blackberry, boysenberry, dewberry, loganberry, raspberry, youngberry,

1015 = blueberry

1016 = cranberry

1017 = currant

1018 = elderberry

1019 = gooseberry

1020 = grapes (for wine see beverage crops)

- 1021 = huckleberry,
- 1022 = strawberry
- 1023 = bushberries, serviceberry, mulberry
- 1100 = Tree fruits unspecified
  - 1110 = Citrus fruits
    - 1101 = grapefruit
    - 1102 = lemon
    - 1103 = lime
    - 1104 = oranges
    - 1105 = tangelo, tangerine, other citrus hybrids
    - 1106 = citron, kumquat, pummelo
  - 1120 = Tree Nuts
    - 1121 = almond
    - 1122 = chestnut
    - 1123 = filbert (hazelnut)
    - 1124 = hickory nut
    - 1125 = pecan
    - 1126 = pistachio
    - 1127 = walnut
    - 1129 = other tree nuts e.g. brazil nuts, cashew, macadamia nut (bushnut), butternut
  - 1130 = Pome fruits
    - 1131 = apple
    - 1132 = crabapple
    - 1133 = pear
    - 1134 = quince
    - 1135 = mayhaw (hawthorn)]
  - 1140 = Stone Fruits
    - 1141 = apricot
    - 1142 = cherry
    - 1143 = nectarine
    - 1144 = peach
    - 1145 = plum
    - 1146 = prune
  - 1200 = Subtropical and miscellaneous fruits  
 [avocado, banana, coconut, date, fig, guava, mango, loquat, olive, papaya, pawpaw, persimmon, pineapple, passion fruit, pomegranate, plantain, litchee nut, kiwifruit, caprifig, acerola, ginkgo nut, mamey, surinam cherry, soursop, sugar apple (custard apple), breadfruit, pricklypear, carambola, cherimoya, longan, mamaladebox, granadilla, sapota, star apple, Japanese plum, sapodilla]
- 2000 = Beverage Crops
  - 2001 = chicory
  - 2002 = cocoa
  - 2003 = coffee
  - 2004 = cola
  - 2005 = hops
  - 2006 = mints
  - 2007 = tea
  - 2008 = wine grapes
- 3000 = Flavoring and Spice Crops [angelica, anise, balm, basil, caraway, cassia, catnip, celery, cinnamon, cloves, coriander, cumin, dill, elecampane, fennel, fenugreek, ginger, hops, horehound, horseradish, juniper, lavender, licorice, marjoram/ oregano, mint/peppermint / spearmint, mustard, nutmeg, pennyroyal, pepper(black/white/ chili/paprika type), rosemary, rue, safflower, sage, savory, sesame, bay/sweet bay, tamarind, tansy, tarragon, thyme, turmeric, vanilla, wintergreen, wormwood, allspice, poppy, chamomile, costmary, hyssop, marigold, nasturtium, woodruff, valerian]
- 4000 = Vegetable Crops

- 4100 = Curcurbit Vegetables
  - 4101 = melons
  - 4102 = cucumber
  - 4103 = squash (all)
  - 4104 = okra
  - 4105 = gherkin
  - 4106 = chayote
- 4200 = Fruiting Vegetables
  - 4201 = eggplant
  - 4202 = pepino
  - 4203 = pepper
  - 4204 = pimento
  - 4205 = tomato
  - 4206 = tomatillo
- 4300 = Leafy vegetables
  - 4301 = artichoke
  - 4302 = broccoli
  - 4303 = brussel sprouts
  - 4304 = cabbage
  - 4305 = cauliflower
  - 4306 = celery
  - 4307 = collards
  - 4308 = kale
  - 4309 = lettuce (all varieties),
  - 4310 = miscellaneous leafy vegetables e.g., chicory corn salad, dandelion, endive (escarole), fennel, cress, kohlrabi, , mustard, parsley, rhubarb, spinach, turnip, watercress, pricklypear cactus pads, grapeleaves, bamboo shoots, broccoli raab, mustard cabbage (pakchoi), chervil, roquette (arugula), dock, peppergrass
- 4400 = Root and Tuber Vegetables
  - 4401 = beets (not sugar)
  - 4402 = carrot (including tops)
  - 4403 = garlic
  - 4404 = horseradish
  - 4405 = Jerusalem artichoke
  - 4406 = leek
  - 4407 = onion (including green, spring and scallions)
  - 4408 = parsnip
  - 4409 = potato
  - 4410 = radish (all types)
  - 4411 = rutabaga
  - 4412 = miscellaneous root and tuber crops e.g., celeriac, chive, taro, salsify, shallot, sweet potato, turnip, yam, lotus root, manioc (cassava), arrowroot, yautia, water chestnut, chufa (ground almond)
- 4500 = Seed and Pod Vegetables
  - 4501 = beans (fresh and dried all types)
  - 4502 = peas (fresh and dried all types)
  - 4503 = bean sprouts (all types)
  - 4504 = carob
- 4600 = Miscellaneous vegetables
  - 4601 = algae
  - 4602 = asparagus
  - 4603 = mushrooms
  - 4604 = seaweed
- 5000 = Grains, Grasses and Fiber Crops
  - 5010 = Fiber crops
    - 5011 = cotton
    - 5012 = flax



- 5013 = miscellaneous fiber crops e.g., hemp, kenaf, ramie, abaca, broomcorn
- 5100 = Grasses for Forage, Fodder Hay and Silage
  - [when intended use is forage, fodder hay and silage: millet, sorghum, corn, oats wheat, barley, rye, sudangrass, pasture, bermudagrass, bluegrass, timothy, rice, millet, canarygrass, grasses for bird seed]
- 5200 = Legumes and Related Crops for Forage, Fodder Hay and Silage
  - [when intended use is forage, fodder hay and silage: alfalfa, beans, clover, cotton, lespedeza, peanuts, peas(including vines),sugar beets (including tops), vetch, trefoil, sainfoin, soybeans, carrot tops, carob, rape, kudzu, lupine, buckwheat]
- 5300 = Cereal Grain Crops
  - 5301 = barley
  - 5302 = corn
  - 5303 = millet (proso, broomcorn)
  - 5304 = oats
  - 5305 = rice
  - 5306 = rye
  - 5307 = sorghum
  - 5308 = teosinte
  - 5309 = triticale
  - 5310 = wheat
  - 5311 = wild rice
- 5400 = Sugar Crops
  - 5401 = honeycomb
  - 5402 = sugar beet
  - 5403 = sugarcane
  - 5404 = sugar maple
  - 5405 = sorghum
- 5500 = Miscellaneous Field Crops
  - 5501 = tobacco
  - 5502 = other field crops e.g., popcorn, pyrethrum, sesame, pine nuts, grasses for seed and non-forage use
- 6000 = Oil Crops
  - 6001 = field corn
  - 6002 = cotton
  - 6003 = mint/ peppermint/ spearmint
  - 6004 = olive
  - 6005 = peanuts
  - 6006 = safflower
  - 6007 = soybeans
  - 6008 = sunflower
  - 6009 = miscellaneous oil crops e.g., avocado, castor bean, flax, sesame, tung, wormseed, coconut, rape, jojoba, palm
- 6010 = Application to seeds
- 6020 = Processed foods not otherwise specified
- 6500 = Crops that cross categories 0900-6000
- 8500 = Other
  - 8501 = mixed crop and non-crop areas
- 9998 = NA
- 9999 = unknown

Comment: This variable was added effective January 1, 2003. This variable will provide users with information on patterns of illness associated with particular crops when the crop itself is not the application target. This information will be useful for developing intervention strategies. The coding scheme for this variable is adapted from EPA and USDA coding. Information coded in this field should be at the most specific level available. Note that last character for this variable is optional. It allows the most specific level of coding for crops if a state wishes to capture this level of information. It should be right padded with 0 as a default. This variable only applies to agricultural exposure events. For non-agricultural events the

default should be 9998 = NA. This variable should be used when **APPTARGT** is coded as 070, 100-650 or 998. States may also use it to record the crop that exposed individuals were working in for events involving drift.

**EXPOCOMM** (CEXPCOMM)

Definition: Describes additional important aspects of exposure not covered in variables in this section.

Width: 125

Type: Character

Core: No

FAQ:

Coding: Narrative, describe anything that would impact on interpreting coded information. Information regarding anything unusual about the exposure event should be indicated here. Note equipment failures, judgments regarding adequacy of personal protective equipment, training, and specifics about the exposure site that are relevant, etc. Clarify the information coded in **TYPEOTH** if necessary (e.g. if this variable is coded as 1=Yes, indicate the specific type of exposure). Provide other background information on type and route of exposure (e.g. if **INGESTION** was coded as yes, indicate whether a pesticide product, contaminated food or drinking water was ingested). A brief descriptor of the incident is useful e.g. “24 workers picking cabbages in field were drifted on during aerial application to adjacent tomato field owned by another grower” or “worker had not been fit tested, had a mustache, and respirator cartridges had not been changed for 2 weeks, though worker applied pesticides several hours each day”.

Comment: This narrative can be as short as needed, and does not need to be written in sentence form.

## AGENT INFORMATION

Chemical agent information should be structured as a relational database. Refer to the SPIDER Technical Manual that includes the data dictionary and Table Relationships for further information and suggested structure. The most specific level of data is the EPA Registration number. If this is not known, and cannot be determined based upon the product name, enter the active ingredient(s) (Generic in SPIDER). If the active ingredient(s) is not known, either **CHEMCLAS** or **FUNCLAS** must be entered with a value other than "unknown" or "not applicable".

The system should permit entry of active ingredient PC Codes, chemical class or functional class when a specific product name or EPA registration number is not available. There should be sufficient room in the system to record information on an infinite number of products per individual. If this is not feasible then the system may be designed to permit entry of a minimum of 4 products per exposure incident. (If this approach is used, the products thought most likely to be responsible for illness should be coded.)

**REG\_NR** (REG\_NR)  
Definition: The EPA Registration Number for the product composed of the 11-digit product registration number (1-6 digit manufacturer and 1-5 digit product identification numbers) and the 6-digit distributor number.  
Width: 17  
Type: Character  
Core: No, see comments  
FAQ:  
Coding: Character  
Comment: Use leading zeroes to pad the front of each part of the manufacturer number, the product and the distributor identification number for consistent entry. Search either the EPA product look-up in SPIDER or the National Pesticide Information Retrieval System (NPIRS) web site (<http://ppis.ceris.purdue.edu/htbin/ppismenu.com>) to determine the EPA registration number unless the registration number is available from the chemical product identification provided through case investigation. If you have both the name of a manufacturer and the product the NPIRS website will help you distinguish between products with the same name. The distributor number may be kept as a separate variable, in which case it should be named DIST\_NR. If you do not have sufficient information to determine the specific product **do not** enter a product name and registration number.

If you enter a registration number and find that the listed product name in SPIDER or the NPIRS Website does not match the product name identified as part of the report investigation, or if the active ingredients do not match information obtained during the investigation do not enter the EPA Registration code. Instead, enter the PC Code for the active ingredient the individual was exposed to in the variable **ACTIVING** and make a note of the product name and Registration number in the **AGCOM** field. Check with your state department of agriculture to determine if the product is registered in your state with the product name identified during the investigation. Note that many state level registrations can be found at the NPIRS website <http://ppis.ceris.purdue.edu/npublic.htm>. Registrations for Oregon and Washington can be found at the Pesticide Information Center On-Line (PICOL) website: <http://picol.cahe.wsu.edu/LabelTolerance.html>. Other states not covered by these two systems may have registrations listed at the state's website by the agency responsible for pesticide registration in the state. **Provide the EPA Registration number and the two product names, and state registration status to the SENSOR pesticides listserv for resolution of the conflicting data.**

**PRODUCT** (CPRODNAME)  
Definition: Manufacturer's designated name for the product  
Width: 70  
Type: Character  
Core: No  
FAQ:  
Coding: Narrative  
Comment: Literal documentation of product name. This should be taken directly from the list of products

embedded in SPIDER, or the list that is available on the NPIRS web site. If the specific name of the pesticide product is not known then do not enter a product name, only enter an active ingredient PC Code in the field **ACTIVING**.

If there is more than one product with the same name, and you do not know the manufacturer or the product registration number, you need to determine whether all products with that name contain the same active ingredient(s) in the same concentration(s) (the percentage of an ingredient in the product may vary by plus or minus 5%). If all products contain the same ingredient(s), in the same concentration (within 5% variation), then enter the product name, which occurs first when listing products in SPIDER or a NPIRS report on the product name. If the product name is associated with multiple products and the active ingredients are not the same, and you do not have any other information regarding the chemical name or chemical class, enter the Product Name in the AGCOM narrative, not in this field. (SPIDER users will enter the product name in the 'Other Sources' table on the EVENT screen. The product variable should not be used to collect information about spray adjuvants or fertilizers. If states desire to collect this information they should develop a separate variable. SPIDER users may record spray adjuvants and fertilizers under the 'Other Sources' table on the EVENT screen.)

**ACTIVING** (PC\_CODE, EPA CODE, Chemical ID)  
Definition: EPA designated code for the active ingredient.  
Width: 6  
Type: Character  
Core: No  
FAQ:  
Coding: Numerical coding that matches the EPA PC Coding  
Comment: The use of an additional variable for alpha names for the active ingredients is optional. There are multiple synonyms associated with each PC code in the EPA data system. Changes to the EPA data system in 2003 required a change in how states selected an alpha name for consistency in the name shown associated with a particular EPA designated PC Code. The variable PREFNAME was added effective January 2006 to address this issue. Programmers should see the SPIDER Technical Manual for additional discussion of this issue.

**PREFNAME** (CPREFNAME)  
Definition: The flag to designate the NIOSH-SENSOR-Pesticides preferred chemical name associated with a particular EPA designated PC Code.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: This variable uses automatic default coding assigned by the programmer, in SPIDER an asterisk is used to designate the preferred name.  
Comment: See comments for **ACTIVING**.

**ACTINGP** (NPESTPCNT)  
Definition: The percentage by weight of the active ingredient(s) contained in the pesticide product.  
Width: 8  
Type: Numeric  
Core: No  
FAQ:  
Coding: Numeric weight percentage with four decimal places.  
Comment: The system should allow for multiple active ingredients per product and the percentage should be linked to specific product. Refer to SPIDER for suggested table relationships. This should be an automatically coded field based upon the EPA Registration # using data from either SPIDER or the NPIRS web site. Data may be entered manually if the available information is the active ingredient, and percent active ingredient in the product. Used to evaluate exposure.

**CHEMCLAS** (CCLASS)  
 Definition: Chemical classification of active ingredient  
 Width: 2  
 Type: Character  
 Core: No  
 FAQ:  
 Code: 01 = organochlorine compound  
 02 = organophosphorous compound  
 03 = N-methyl carbamates  
 04 = pyrethrin  
 05 = pyrethroid  
 06 = dipyridyl compound  
 07 = chlorophenoxy compound  
 08 = triazines  
 09 = thiocarbamates  
 10 = organo-metallic compound  
 11 = inorganic compounds  
 12 = coumarins  
 13 = indandiones  
 14 = convulsants  
 15 = microbial  
 16 = dithiocarbamates  
 95 = unidentified cholinesterase inhibitor  
 96 = other  
 97 = multiple (PC Code indicates a code for a combination of active ingredients that cross chemical classes)  
 99 = unknown

Comment: This variable is intended to be automatically coded based on the specific active ingredient. The surveillance program would not be expected to determine chemical classification unless the EPA registration number, complete product name, or active ingredient name is unavailable. This chemical class coding scheme is adapted from the World Health Organization 1990-1991 Guidelines. Only a limited number of chemical types are coded. It is recognized that this list is not complete and that some chemicals may fall into more than one classification. The code 96 will be used very rarely, and only for active ingredient PC Codes that are assigned that code in the EPA data system.

**PRODCLAS** (CPRODCLASS)  
 Definition: Chemical classification of the product  
 Width: 2  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 01 = organochlorine compound  
 02 = organophosphorous compound  
 03 = N-methyl carbamates (AChE inhibitor)  
 04 = pyrethrin  
 05 = pyrethroid  
 06 = dipyridyl compound  
 07 = chlorophenoxy compound  
 08 = triazines  
 09 = thiocarbamates  
 10 = organo-metallic compound  
 11 = inorganic compounds  
 12 = coumarins  
 13 = indandiones  
 14 = convulsants  
 15 = microbial

- 16 = dithiocarbamates
- 17 = AChE inhibitors (combination of 02 and 03 only)
- 18 = AChE inhibitors with pyrethrin or pyrethroid only
- 19 = AChE inhibitors with pyrethrin or pyrethroid + other
- 20 = AChE inhibitors with organochlorine compounds
- 21 = AChE inhibitors with compounds not otherwise listed
- 22 = pyrethrin plus pyrethroid only
- 23 = pyrethrin plus pyrethroid plus other compound not otherwise specified
- 24 = inorganic plus organometallic compounds only
- 25 = organochlorine plus inorganic compounds
- 95 = unidentified cholinesterase inhibitor
- 96 = Includes one or more active ingredients, none of which fall into product classes "01" through "16".
- 97 = Multiple (product contains multiple active ingredients which do not fit in any of the codes specified in codes 17-25)
- 99 = unknown

**Comment:** This variable is intended to be automatically coded based upon the active ingredients present in the product formulation. If the active ingredients represent a combination of more than one chemical class not described in codes 17-25 then the product should be coded as 'multiple'. The only exception is if the product contains only two active ingredients, and one of them is a synergist or solvent (for a list see Appendix B, Table B-1) and the product is an insecticide. In this case the product class should be based on the product class of the non-synergist active ingredient.

The surveillance program would not be expected to determine chemical classification unless the EPA registration number, complete product name, or active ingredient name is unavailable. Contact NIOSH if there are questions regarding chemical class coding. This chemical class coding scheme is adapted from the World Health Organization 1990-1991 Guidelines. Only a limited number of chemical types are coded. It is recognized that this list is not complete and that some chemicals may fall into more than one classification. The code "95" should only be used for the rare circumstance when exposure is reported, and clinical testing indicates cholinesterase inhibition, but there is no further information available to classify the chemical product to which the individual was exposed. Either **CHEMCLAS** or **FUNCLAS** must be entered with a value other than "unknown" or "not applicable".

**FUNCLAS**

(CPRODTYPE)

**Definition:** Functional classification of pesticide product.

**Width:** 2

**Type:** Character

**Core:** Yes

**FAQ:**

**Coding:**

- 01 = Insecticide (excluding solely IGR and fumigants)
- 02 = Insect Growth Regulator (IGR)
- 03 = Herbicide\algicide
- 04 = Fungicide
- 05 = Fumigant
- 06 = Rodenticide
- 07 = Disinfectant/Broad Spectrum for Water Sanitation
- 08 = Insect Repellent
- 09 = Antifouling agent (marine paints)
- 10 = Insecticide and Herbicide (01& 03)
- 11 = Insecticide and Fungicide (01 & 04)
- 12 = Insecticide and Herbicide and Fungicide (01 & 03 & 04)
- 13 = Insecticide and Other (01 & 96)
- 14 = Herbicide and Fungicide (03 & 04)
- 96 = Other (includes biological controls, plant growth regulators, antibiotics, etc.)
- 97 = Multiple (product is classified as multiple classes which do not fit in any of the codes specified in codes 10-14)

99 = unknown

Comments: These functional classes are provided as an additional way to categorize products and exposures. These classes are not necessarily mutually exclusive. If a product is registered for more than one class of functional use choose the one that the product was being used for. If the product was being misused, code the registered use of the product, not how the individual was misusing it. The current EPA coding of products includes many more codes than the recommended coding in this dictionary. Either **PRODCLAS** or **FUNCLAS** must be entered with a value other than "unknown" or "not applicable".

**FORM** (CPRODFORM2)

Definition: Indicates the physical formulation of the product.

Width: 2

Type: Character

Core: No

FAQ:

Coding: 01 = Dust/powder (not pressurized)  
02 = Granular/Flake  
03 = Pellet/Tablet/Cake/Briquette  
04 = Wetable Powder/dust  
05 = Impregnated material (ant/plant stakes, animal collars, water filters, solid agar)  
06 = Other dry formulation (crystalline, water dispersible granules, pressurized dust)  
07 = Microencapsulated  
08 = Emulsifiable concentrate  
09 = Soluble concentrate  
10 = Flowable concentrate  
11 = Pressurized liquid/spray/fogger - Include aerosol spray cans  
12 = Ready-to-Use Liquid/Solution  
13 = Other liquid formulation  
14 = Pressurized Gas/Fumigant  
16 = Other  
99 = Unknown

Comment: This variable will be useful for evaluating exposure and for tracking trends related to particular types of pesticide formulations. This coding scheme is a condensed system based upon several EPA coding systems. A crosswalk between this list and the EPA formulation coding system used in SPIDER is included in the SPIDER Technical Manual.

**TOXCODE** (CTOXCDE)  
Definition: EPA Signal word. .  
Width: 1  
Type: Character  
Core: Yes  
FAQ:  
Coding: 0 = No signal word  
1 = Danger  
2 = Warning  
3 = Caution  
4 = Caution  
Comment: This coding should be autocoded from EPA Lookup Table. It should reflect the signal word assigned to the product within the EPA system.

**AGCOM** (CAGENT)  
Definition: Describes additional important information about the pesticides involved in the exposure that is not captured by the variables in this section.  
Width: 125  
Type: Character  
Core: No  
FAQ:  
Coding: Narrative, describe anything that would impact on interpreting coded information. Note anything unusual about the products, including concerns about proper product identification.  
Comment: This narrative can be as short as needed, and does not need to be written in sentence form.



## HEALTH EFFECT DESCRIPTORS

### BIOLOGIC MONITORING

The following variables capture a minimal level of information about biological monitoring and diagnostic tests for pesticide residue and metabolites. Some states may choose to record more detailed information in the state database, but more specific information is not needed for the aggregated national database.

#### **CHLNTEST** (CTESTTYPE)

Definition: Indicates which cholinesterase test(s) if any, were performed.

Width: 1

Type: Character

Core: Yes

FAQ:

Coding: 1 = RBC  
2 = Plasma  
3 = Both RBC & Plasma  
4 = not done  
5 = Either RBC or Plasma  
8 = not applicable  
9 = unknown

Comment: Code as "8" for all non-cholinesterase inhibitors. Must be completed if data is used to support case classification.

#### **CHLNRESL** (CRESULT)

Definition: Indicates the results of cholinesterase testing, and what standard was used for the "normal" comparison.

Width: 1

Type: Character

Core: Yes

FAQ:

Coding: 1 = abnormal compared to lab\*  
2 = abnormal compared to baseline \*\*  
3 = within normal limits compared to lab  
4 = normal compared to baseline  
7 = bad specimen  
8 = not applicable  
9 = unknown

Comment: Must be completed if data is used to support case classification. If both RBC and plasma were performed and only one was abnormal, code only the test result that was abnormal. If both tests were abnormal but a baseline was available for one test, code the results for the test with a baseline. Codes "3" and "4" were added to accommodate those states wishing to track "normal" cholinesterase results using this variable. These are optional codes, not required as part of the core data. States that do not wish to use these alternate codes may use "8 not applicable" when results are within normal limits or when cholinesterase testing was not performed. States that wish to collect detailed results of laboratory tests are referred to the SPIDER Technical Manual for a model of recommended coding of this data.

\* Abnormal compared to lab is defined as a cholinesterase level below laboratory normal range when no baseline test result is available for comparison.

\*\* Abnormal compared to baseline is defined as:

1) 30% depression from baseline (pre-exposure or 60-90 days post exposure) RBC cholinesterase level, and/or;

2) 40% depression from baseline plasma cholinesterase level.

(N.Y. definition of cholinesterase depression)

#### **OTHRBIOL** (COTHERTEST)

Definition: Describes whether other biologic monitoring for pesticides and metabolites was performed that is not captured in previous variables.  
 Width: 1  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: 1 = Yes  
           2 = No  
           9 = Unknown  
 Comment: This field will allow tracking of how frequently other forms of biologic monitoring are performed

**MEDICAL DIAGNOSIS**

**MEDDIAG** (CDIAGNOSIS)  
 Definition: Provides a description of the medical diagnosis by the attending health care provider.  
 Width: 60  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: Narrative  
 Comment: Brief literal of diagnosis of individual's illness from attending health care provider. Left blank if none or unknown. Treatment information was removed as this was universally rejected as too cumbersome and not useful.

**PREEXCON** (No Equivalent SPIDER Variable)  
 Definition: Indicates whether the exposed individual had any pre-existing conditions that could impact on their response to exposure.  
 Width: 1  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: 1 = clinician reported  
           2 = exposed individual reported  
           3 = reported by both  
           4 = pre-existing condition was not present (interview or medical record indicates that this information was solicited but condition was found not to be present or condition is clearly not applicable.)  
           9 = unknown  
 Comment: If coded as "1", "2" or "3" then **COND1** through **COND5** should be reported using the same coding system as **PREEXCON**.

- COND1** (CPREGNANT) Pregnant
- COND2** (CASTHMA) Asthma
- COND3** (CALLERGIES) Allergies (Note the specific allergy under COND5 (Other) if coded as "1", "2" or "3" and the coder is unsure if the allergy would impact the individual's susceptibility to exposure.)
- COND4** (CMCS) Multiple chemical sensitivities (acquired chemical intolerance)

**COND5** (COTHERPRE)  
Definition: Other. Describes other condition that could impact on the individual susceptibility to exposure that is not described in existing codes; or provides an explanation of coding for **COND3** Allergies.  
Width: 20  
Type: Character  
Core: No  
FAQ:  
Coding: Narrative  
Comment: Brief literal of other conditions including physical or mental disability and medical conditions. Indicate whether the individual, clinician or both reported condition (use the same code numbers as **PREXCON**). Note the specific allergy here if COND3 is coded as "1", "2" or "3" *and* the coder is unsure if the allergy would impact the individual's susceptibility to exposure.

**FATAL** (COUTCOME)  
Definition: Describes whether the exposed individual died, and if so whether the death was suspected to be related to pesticide exposure.  
Width: 1  
Type: Character  
Core: Yes  
FAQ:  
Coding: 1 = fatal, suspected related to pesticide exposure  
2 = fatal, not suspected to be related to pesticide exposure  
3 = fatal, no determination made regarding relationship between death and pesticide exposure  
8 = not applicable (i.e. This was not a fatality.)  
9 = unknown  
Comment: It is recognized that not all states will report this variable due to concerns about legal ramifications of making this determination.

## **SIGNS AND SYMPTOMS**

The specific symptoms were adapted from the American Association of Poison Control Centers Toxic Exposure Surveillance System.

### **DERMATOL (LDERMSYMP)**

Definition: Indicates whether health effect involved irritation or sensitization of skin.

Width: 1

Type: Character

Core: Yes

FAQ:

Coding: 1 = yes (sign or symptom reported as present by individual or clinician)  
2 = no (not reported, or unknown)

Comment: If coded as "1" then **DERM1** through **DERM7** and **DERM9** should be reported using the coding system described for **DERM1** below. If **DERMATOL** is coded as "2=No" then skip the variables **DERM1** through **DERM99**.

### **DERM1 (BULLAE)**

Definition: Bullae

Width: 1

Type: Character

Core: Yes

FAQ:

Coding: 1 = clinician reported  
2 = exposed individual reported  
3 = reported by both  
4 = sign or symptom was not present (statement in chart notes or interviews indicates that information on sign/symptom was sought but found not present). Code changed to optional in 7/2004, based on consensus discussion that significant negative findings should be noted in narrative and do not need to be coded.  
9 = unknown

Comment: Code bullae (blisters) from pesticide exposure in this variable. This includes first degree chemical burns. Exclude thermal burns unless they are directly related to the pesticide (eg. a burning pesticide container).

### **DERM2 (CSKINBURN)**

Burns (second and third degree) This should include burns from chemical exposure only.

### **DERM3 (CSKINEDEMA)**

Edema (Edema/Swelling) Edema may be associated with allergic responses, angioedema, hives, etc. Include edema of extremities and joints. Include periorbital edema or swollen eyes.

### **DERM4 (CREDNESS)**

Erythema Redness of the skin. Include facial flushing, or hot sensation of the skin (not a burning sensation which is coded under **DERM6**).

### **DERM5 (CRASH)**

Rash. Include: contact dermatitis, irritant dermatitis, rash, open skin sores, blepharitis, eczema.

### **DERM6 (CSKINPAIN)**

Irritation/Pain. Include: pain, sensation of burning skin not associated with a thermal burn. Tingling, numbness sensation of the extremities, face or ears should be coded under Paresthesias **NS19**.

### **DERM7 (CPRURITIS)**

Pruritis. Itchy skin.

### **DERM9 (CHIVES)**

Hives

### **DERM8 (PATTERN)**

Definition: Describes the pattern of distribution for lesions described in the other DERM variables.

Width: 1

Core: Yes

FAQ:

Coding: 1= Corresponds well with physical pattern of exposure

- 2= Discrete patches of lesions that do not correspond with what is known about the pattern of exposure
- 3= Generalized distribution of lesions on the body
- 4 = Not present (statement in chart notes or interviews indicates that information on lesions was sought but found not present)
- 9= Unknown

Comment: If more than one type of skin lesion is present this variable should be used to code for the predominant one. If no lesions are present code as "4 = Not present".

**DERM99** (COTHERDER)  
 Definition: Describes other dermatologic signs or symptoms not described in existing codes  
 Type: Character  
 Width: 20  
 Core: No  
 FAQ:  
 Coding: Narrative  
 Comment: Brief literal of other dermatologic signs or symptom(s)

**EYE** (LOCCSYMP)  
 Definition: Indicates whether health effect involved direct contact with and injury to eye  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = yes (sign or symptom reported as present by individual or clinician)  
 2 = no (not reported, or unknown)  
 Comment: If coded as "1" then **EYE1** through **EYE7** should be reported using the coding system described for **EYE1** below. If **EYE** is coded as "2=No" then skip the variables **EYE1** through **EYE8**.

**EYE1** (MIOSIS)  
 Definition: Miosis (Contraction of the pupil (pinpoint pupils).  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = clinician reported  
 2 = exposed individual reported  
 3 = reported by both  
 4 = sign or symptom was not present (statement in chart notes or interviews indicates that information on sign/symptom was sought but found not present). Code changed to optional in 7/2004, based on consensus discussion that significant negative findings should be noted in narrative and do not need to be coded.  
 9 = unknown

- |             |              |   |
|-------------|--------------|---|
| <b>EYE2</b> | (CEYEBURN)   | Burns (Any reaction described as a chemical burn to the eye.)   |
| <b>EYE3</b> | (CABRASION)  | Corneal abrasion  |
| <b>EYE4</b> | (CTEARS)     | Lacrimation (tearing of the eyes)   |
| <b>EYE5</b> | (CEYEPAIN)   | Pain/irritation/inflammation (include the sensation of burning eyes or itching eyes, injection, irritation, red eyes)   |
| <b>EYE6</b> | (CMYDRIASIS) | Mydriasis (Extreme dilation of the pupil)   |
| <b>EYE7</b> | (CCONJDX)    | Diagnosis of conjunctivitis. This variable should only be used for a diagnosis of conjunctivitis, when no specific information on signs and symptoms are provided. This variable was previously coded under <b>EYE5</b> . Use of <b>EYE7</b> was initiated in 2003. |

**EYE8** (COTHEROCC)  
 Definition: Describes other ocular symptoms not described in existing codes

Width: 20  
Type: Character  
Core: Yes  
FAQ:  
Coding: Narrative  
Comment: Brief literal of other ocular symptom(s)

**RESPIRAT** (LRESP)  
Definition: Indicates whether health effect involved upper or lower respiratory symptoms  
Width: 1  
Type: Character  
Core: Yes  
FAQ:  
Coding: 1 = yes (sign or symptom reported as present by individual or clinician)  
2 = no (not reported, or unknown)  
Comment: If coded as "1" then **RESP1** through **RESP11** should be reported using the coding system described for **RESP1** below. If **RESPIRAT** is coded as "2=No" then skip the variables **RESP1** through **RESP99**.

**RESP1** (CCOUGH)  
Definition: Cough  
Width: 1  
Type: Character  
Core: Yes  
FAQ:  
Coding: 1 = clinician reported  
2 = exposed individual reported  
3 = reported by both  
4 = sign or symptom was not present (statement in chart notes or interviews indicates that information on sign/symptom was sought but found not present). Code changed to optional in 7/2004, based on consensus discussion that significant negative findings should be noted in narrative and do not need to be coded.  
9 = unknown

**RESP2** (CCYANOSIS) Cyanosis (Bluish discoloration of the skin and mucous membranes associated with concentration of reduced hemoglobin in the blood.)

<b>RESP3</b>	(CRESPPAIN)	Upper respiratory pain/irritation Include: congestion, sinus pain, sore throat, runny nose, oral or nasal rash or blistering, persistent sneezing, burning tongue, laryngitis, post nasal drip, clogged ears, chest heaviness.
<b>RESP4</b>	(CDYSPNEA)	Dyspnea/Shortness of breath. Include: difficulty breathing, unable to get breath, gasping, bronchospasm, asthma attack.
<b>RESP5</b>	(CTACHYPNEA)	Hyperventilation/tachypnea. (Rapid shallow breathing)
<b>RESP6</b>	(CRESPEDEMA)	Pulmonary Edema
<b>RESP7</b>	(CDEPRESS)	Respiratory depression
<b>RESP8</b>	(CPLEURPAIN)	Pleuritic chest pain/pain on deep breathing
<b>RESP9</b>	(CWHEEZE)	Wheezing
<b>RESP10</b>	(CLRESPPAIN)	Lower respiratory tract irritation. Include rales, rhonchi, chest discomfort, crackles, chest tightness.
<b>RESP11</b>	(CASTHMADX)	Diagnosis of asthma attack, or exacerbation of asthma

**RESP99** (COTHERRES)

**Definition:** Describes other respiratory symptoms not described in existing codes (eg. epistaxis (nosebleed), pulmonary fibrosis, respiratory failure, reactive airway disease, chemical pneumonitis).

**Width:** 20

**Type:** Character

**Core:** Yes

**FAQ:**

**Coding:** Narrative

**Comment:** Brief literal of other respiratory signs and/or symptom(s)

**GI** (LGASTRO)

**Definition:** Indicates whether health effect involved gastrointestinal symptoms

**Width:** 1

**Type:** Character

**Core:** Yes

**FAQ:**

**Coding:** 1 = yes (sign or symptom reported as present by individual or clinician)  
2 = no (not reported, or unknown)

**Comment:** If coded as "1" then **GI1** through **GI7** should be reported using the coding system described for **GI1** below. If **GI** is coded as "2=No" then skip the variables **GI1** through **GI8**.

**GI1** (CGASTPAIN)  
 Definition: Abdominal pain/cramping  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = clinician reported  
 2 = exposed individual reported  
 3 = reported by both  
 4 = sign or symptom was not present (statement in chart notes or interviews indicates that information on sign/symptom was sought but found not present). Code changed to optional in 7/2004, based on consensus discussion that significant negative findings should be noted in narrative and do not need to be coded.  
 9 = unknown.

<b>GI2</b>	(CANOREXIA)	Anorexia (Loss of appetite)
<b>GI3</b>	(CCONSTIP)	Constipation
<b>GI4</b>	(CDIARRHEA)	Diarrhea
<b>GI5</b>	(CNAUSEA)	Nausea
<b>GI6</b>	(CVOMIT)	Vomiting
<b>GI7</b>	(CBLOODY)	Melena/Hematemesis/bloody stools or vomit (GI bleeding)

**GI8** (COTHERGAST)  
 Definition: Describes other gastrointestinal symptoms not described in existing codes  
 Width: 20  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: Narrative  
 Comment: Brief literal of other gastrointestinal signs and/or symptom(s)

**RENALGU** (LRENAL)  
 Definition: Indicates whether health effect renal/genitourinary symptoms  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = yes (sign or symptom reported as present by individual or clinician)  
 2 = no (not reported, or unknown)  
 Comment: If coded as "1" then **GU1** through **GU4** should be reported using the coding system described for GU1 below. If **RENALGU** is coded as "2=No" then skip the variables **GU1** through **GU8**.



**GU1** (CPOLYURIA)  
 Definition: Polyuria (Frequent passing of urine)  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = clinician reported  
 2 = exposed individual reported  
 3 = reported by both  
 4 = sign or symptom was not present (statement in chart notes or interviews indicates that information on sign/symptom was sought but found not present). Code changed to optional in 7/2004, based on consensus discussion that significant negative findings should be noted in narrative and do not need to be coded.  
 9 = unknown

**GU2** (COLIGURIA) Oliguria/anuria (Reduced or absent urine production)  
**GU3** (CHEMATURIA) Hematuria (Passing blood in the urine)  
**GU4** (CPROTEIN) Proteinuria (Protein in the urine)

**GU8** (COTHERREN)  
 Definition: Describes other renal/genitourinary symptoms not described in existing codes  
 Width: 20  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: Narrative  
 Comment: Brief literal of other renal/genitourinary signs and/or symptom(s)

**NERVSENS** (LNEUROLOGI)  
 Definition: Indicates whether health effect includes nervous/sensory symptoms  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = yes (sign or symptom reported as present by individual or clinician)  
 2 = no (not reported, or unknown)  
 Comment: If coded as "1" then **NS1** through **NS21** should be reported using the coding system described for NS1 below. If **NERVSENS** is coded as "2=No" then skip the variables **NS1** through **NS99**.

**NS1** (ATAXIA)  
 Definition: Ataxia (Irregular muscular coordination.)  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = clinician reported  
 2 = exposed individual reported  
 3 = reported by both  
 4 = sign or symptom was not present (statement in chart notes or interviews indicates that information on sign/symptom was sought but found not present). Code changed to optional in 7/2004, based on consensus discussion that significant negative findings should be noted in narrative and do not need to be coded.  
 9 = unknown

**NS2** (CRESTLESS) Hyperactivity/anxiety/irritability (Include nervousness, anxious affect)  
**NS3** (CCOMA) Coma  
**NS4** (CCONFUSED) Confusion (Include problems with thinking other than memory loss.)

<b>NS5</b>	(CSEIZURE)	Seizure(s)
<b>NS6</b>	(CFASIC)	Fasciculations (Localized contraction of muscles resulting from the discharge of fibers that are innervated by a single nerve filament. These contractions can be seen under the skin.)
<b>NS7</b>	(CHEADACHE)	Headache
<b>NS8</b>	(CWEAKNESS)	Muscle weakness
<b>NS9</b>	(CRIGIDITY)	Muscle rigidity
<b>NS10</b>	(CPARALYSIS)	Paralysis
<b>NS11</b>	(CPERIPHERY)	Peripheral neuropathy
<b>NS12</b>	(CSLURRED)	Slurred speech
<b>NS13</b>	(CSWEAT)	Diaphoresis/Profuse sweating (diaphoresis, heavy sweating, cold sweat)
<b>NS14</b>	(CBLURRED)	Blurred vision (Code blurred vision from mechanical eye injury under EYE8)
<b>NS15</b>	(CDIZZY)	Dizziness
<b>NS16</b>	(CMUSCLE)	Muscle pain (muscle aches, neck pain, back pain)
<b>NS17</b>	(CFAINT)	Fainting
<b>NS18</b>	(CPTYALISM)	Salivation (Include drooling and increased salivation)
<b>NS19</b>	(CPARESTHESIAS)	Paresthesias (Sensation of burning or prickling of skin/tingling/numbness apart from a specific injury or rash)
<b>NS20</b>	(CALTEREDTASTE)	Altered taste (Include metallic taste or chemical taste.)
<b>NS21</b>	(CMEMORY)	Memory loss
<b>NS99</b>	(COTHERNEU)	
Definition:	Describes other nervous/sensory symptoms not described in existing codes	
Width:	20	
Type:	Character	
Core:	No	
FAQ:		
Coding:	Narrative	
Comment:	Brief literal of other Nervous/Sensory signs and/or symptom(s).	
<b>CARDVASC</b>	(LCARDIO)	
Definition:	Indicates whether health effect includes cardiovascular symptoms	
Type:	Character	
Core:	Yes	
FAQ:		
Coding:	1 = yes (sign or symptom reported as present by individual or clinician) 2 = no (not reported, or unknown)	
Comment:	If coded as "1" then <b>CV1</b> through <b>CV7</b> and <b>CV9</b> should be reported using the coding system described for <b>CV1</b> below. If <b>CARDVASC</b> is coded as "2=No" then skip the variables <b>CV1</b> through <b>CV9</b> .	

**CV1** (CBRADY)  
 Definition: Bradycardia  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = clinician reported  
 2 = exposed individual reported  
 3 = reported by both  
 4 = sign or symptom was not present (statement in chart notes or interviews indicates that information on sign/symptom was sought but found not present). Code changed to optional in 7/2004, based on consensus discussion that significant negative findings should be noted in narrative and do not need to be coded.  
 9 = unknown

**CV2** (CARREST) Cardiac arrest (Include myocardial infarction.)  
**CV3** (CCONDUCT) Conduction disturbance (Include atrial arrhythmia, atrial fibrillation, sinus arrhythmia, or ventricular arrhythmia.)  
**CV4** (CTACHY) Tachycardia  
**CV5** (CHYPO) Hypotension (Low arterial blood pressure)  
**CV6** (CHYPER) Hypertension (High arterial blood pressure)  
**CV7** (CCHESTPAIN) Chest pain  
**CV9** (CPALP) Palpitations

**CV8** (COTHERCAR)  
 Definition: Describes other cardiovascular symptoms not described in existing codes  
 Width: 20  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: Narrative  
 Comment: Brief literal of other cardiovascular symptom(s)

**MISCSYMP** (LGENERAL)  
 Definition: Indicates whether health effect includes signs, symptoms or test results not captured by the other health effects categories.  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = yes (sign or symptom reported as present by individual or clinician)  
 2 = no (not reported, or unknown)  
 Comment: If coded as "1" then **MISC1** through **MISC6** should be reported using the coding system described for **MISC1** below. If **MISCSYMP** is coded as "2=No" then skip the variables **MISC1** through **MISC8**.

**MISC1** (CFEVER)  
 Definition: Hyperthermia/fever  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = clinician reported  
 2 = exposed individual reported  
 3 = reported by both  
 4 = sign or symptom was not present (statement in chart notes or interviews indicates that information on sign/symptom was sought but found not present). Code changed to optional in 7/2004, based on consensus discussion that significant negative findings should be noted in narrative and do not need to be coded.  
 9 = unknown

<b>MISC2</b>	(CACIDOSIS)	Acidosis
<b>MISC3</b>	(CALKALOSIS)	Alkalosis
<b>MISC4</b>	(CANIONGAP)	Anion gap increase
<b>MISC5</b>	(CFATIGUE)	Fatigue/Malaise (Include: tired, generalized weakness, groggy, sleepy, lethargic, malaise, generalized discomfort or sense of illness, not feeling right.)
<b>MISC6</b>	(CMALaise)	Malaise This variable was discontinued effective August 2003 and combined with fatigue.

**MISC8** (COTHERGEN)  
 Definition: Describes other symptoms that do not fit into coding categories provided  
 Width: 20  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: Narrative  
 Comment: Brief literal of other signs and/or symptom(s)

#### TYPE CARE AND LOST TIME

**TYPECARE** (CFIRSTCARE)  
 Definition: Describes the initial medical care sought following the exposure event.  
 Width: 1  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: 1 = physician office visit  
 2 = emergency room visit  
 3 = hospital admission  
 4 = advice from poison control center  
 5 = no medical care sought  
 6 = other  
 7 = employee health center  
 9 = unknown  
 Comment: Walk-in, non-emergency room and clinic visits should be coded a "1 physician office visit". There was a suggestion to add additional codes to determine the specific type of clinic. This information is not useful at the aggregate level and not collected by all states. On-scene treatment by emergency response personnel should be coded as "6=other" if it was the only treatment received. If on-site treatment by emergency response personnel is followed by other care, code the additional care. An individual should be considered hospitalized if they are formally admitted to the inpatient service of a hospital.

**HOSPSTAY** (NHOSPSTAY)  
 Definition: Length of hospital stay, in days.  
 Width: 3  
 Type: Numeric  
 Core: No  
 FAQ:  
 Coding: Number of days in hospital  
 997= any stay longer than 996 days  
 998 = Not applicable, not hospitalized  
 999 = Unknown, length of stay is unknown or case closed while individual was still hospitalized  
 Comment: Useful as an indicator of severity and cost. An individual should be considered hospitalized if they are formally admitted to the inpatient service of a hospital. The length of hospital stay should be calculated as the number of patient days accumulated at time of discharge by a patient. A stay of less than 1 day (patient admission and discharge on the same day) is counted as 1 day in the summation of total days of care. For patients admitted and discharged on different days, the number of days of care is computed by counting all days from (and including) the date of admission to (but not including) the date of discharge. (The definitions of hospitalization and days of hospitalization are taken with minor adaptations from Graves EJ. National Hospital Discharge Survey: Annual summary, 1993. National Center for Health Statistics. Vital Health Stat 13(121), 1995.)

**LOSTTIME** (CLOSTTIME)  
 Definition: Indicates whether the individual lost one or more days from regular activities.  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = yes, lost work time  
 2 = no lost time  
 3 = unemployed, lost time from school/regular activities  
 9 = unknown  
 Comment: This variable may be used as an indicator of severity and cost. The term unemployed refers to individuals with non-occupational exposures; either unemployed or non-working individuals. If time lost is less than one day this should be coded as "2 = no lost time".

**HEALTHCOM** (CHEALTHNAR)  
 Definition: Describes additional important aspects of illness, medical history, severity captured with variables in this section.  
 Width: 125  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: Narrative, describe anything that would impact on interpreting coded information.  
 Comment: This narrative can be as short as needed, and does not need to be written in sentence form.

## **INVESTIGATION FINDINGS**

### **ENFORCEMENT AGENCY FINDINGS**

For the variables in this section it is recognized that the determination regarding whether a violation has occurred must be made by the regulatory agency with jurisdiction in the appropriate area.

**VIOFIFRA** (CVIOFIFRA)  
Definition: Indicates whether a violation of FIFRA or state pesticide regulations (including the Worker Protection Standard) was found by **the regulatory agency responsible for enforcement of FIFRA and/or state pesticide regulations.**

Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = Violation cited  
2 = Investigated, no violation cited  
3 = Pending  
4 = Individual refused referral  
5 = Referred, not investigated – Use if the case was referred, but the enforcement agency made a decision not to investigate the referral due to resource issues, timeliness or other thresholds that were not met. Code added 10/2005, prior to that this circumstances was coded as '9-unknown'.  
8 = Not applicable, surveillance program staff made decision not to refer to an enforcement agency  
9 = Unknown

Comment: Will allow tracking of cases where illness or injury occurs but no violation is found. This variable should be used effective January 1, 2000. It replaces the variables **VIOLATON1** and **VFIFRAWP**. It is recognized that there are often significant lag times between the exposure incident and when this information becomes available from the enforcement agency. Information should be entered whenever it becomes available.

**VOSHA** (COSHA)  
Definition: Indicates whether a violation of occupational health or safety standards was cited **by the agency responsible for enforcement of OSHA regulations.**

Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = Violation cited  
2 = Investigated, no violation cited  
3 = Pending  
4 = Affected individual refused referral to an appropriate enforcement agency  
5 = Referred, not investigated  
8 = Not applicable, surveillance program staff made decision not to refer to an enforcement agency  
9 = Unknown

Comment: Will allow tracking of cases where illness or injury occurs but no violation is found. It is recognized that there are often significant lag times between the exposure incident and when this information becomes available from the enforcement agency. Information should be entered whenever it becomes available.

**VOTHER** (CVIOL)  
 Definition: Indicates whether other violations associated with pesticide use storage, or transport were found by a regulatory agency  
 Width: 125  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: Literal, narrative describing agency and type of violation found  
 Comment: Will allow tracking of cases where illness or injury occurs but no violation is found.

**VIOLCOM** (CVIOLNAR)  
 Definition: Describes additional important aspects of regulatory violations found not captured with variables in this section.  
 Width: 125  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: Narrative, describe anything that would impact interpretation of the coded information.  
 Comment: This narrative can be as short as needed, and does not need to be written in sentence form. Include information on violations cited, whether violation is closely related to exposure situation.

**VIOLATION1** (CFIFRA)  
 Definition: Indicates whether a violation of FIFRA (other than the Worker Protection Standard) was found by **the regulatory agency responsible for enforcement of FIFRA.**  
 Width: 1  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: 1 = Violation cited  
 2 = No violation cited  
 3 = Pending  
 4 = Individual refused referral  
 8 = Not applicable, surveillance program staff made decision not to refer to an enforcement agency  
 9 = Unknown  
 Comment: NOTE: This variable is replaced by VIOFIFRA effective January 1, 2000, and therefore should be omitted for data collected after that date. Will allow tracking of cases where illness or injury occurs but no violation is found.

**VFIFRAWP** (CEPA)  
 Definition: Indicates whether a violation was found by **the regulatory agency responsible for enforcement of FIFRA Worker Protection Standard**  
 Width: 1  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: 1 = Violation cited  
 2 = No violation cited  
 3 = Pending  
 4 = Individual refused referral  
 8 = Not applicable, surveillance program staff made decision not to refer to an enforcement agency  
 9 = Unknown  
 Comment: NOTE: This variable is replaced by VIOFIFRA effective January 1, 2000, and therefore should be omitted for data collected after that date. Will allow tracking of cases where illness or injury occurs but no violation is found. This should record any WPS violation found regardless of the relationship between the violation and the pesticide-related illness or injury.

STATE SURVEILLANCE SYSTEM INVESTIGATION FINDINGS

States raised concerns about implications for workers of developing a variable that indicates the label was not followed. Employers could potentially access this information with repercussions for the worker depending upon the confidentiality rules of the agency managing the surveillance data. It was still felt that this was valuable information to capture.

**LABEL** (CLABELUSE)  
Definition: Indicates whether there is evidence indicating that the product label was not followed.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = Yes  
2 = No  
8 = Not applicable (suspected intentional exposure)  
9 = Unknown  
Comment: This will allow recording of information regarding the label, without specifying the source of the information.

THE FOLLOWING VARIABLES (**WPS1 – WPS4**) SHOULD ONLY BE COMPLETED IF THE EXPOSED INDIVIDUAL IS A WORKER OR PESTICIDE HANDLER ON AN AGRICULTURAL ESTABLISHMENT (FARM, NURSERY OR FOREST) AS DEFINED BY THE EPA WORKER PROTECTION STANDARD (Census occupation codes 479, 484, 495).

**WPS1A** (CWPS1A) [*Question: Did this incident involve entering a treated field, area or greenhouse?*]  
Definition: Indicates whether the exposure incident being investigated involved entry into an area, field, or greenhouse that had been treated with pesticides.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = Yes  
2 = No  
9 = Unknown or not asked  
Comment: This will allow recording of information regarding aspects of the worker protection standard and training issues. Leave blank if individual is not a farmworker (Census codes 479, 484 or 485).

**WPS1B** (CWPS1B) [*Question: Did the employer or the crew leaders tell you about how soon you could go into the area (field or greenhouse) after it was treated with pesticides?*]  
Definition: Indicates whether the current employer or crew leaders had told the individual about how soon they could go into the area after it was treated with pesticides.  
Width: 1  
Type: Character  
Core: No  
FAQ:  
Coding: 1 = Yes  
2 = No  
8 = Not applicable  
9 = Unknown or not asked  
Comment: This will allow recording of information regarding aspects of the worker protection standard and training issues. Leave blank if individual is not a farmworker (census occupation codes 479, 484, 495). Code as not applicable if **WPS1A** is coded as "2= No".



**WPS2 (CWPS2)** [*Question: This season with your current employer, has your employer/crew leader(s) told you about illnesses or injuries that could be due to pesticides?*]

**Definition:** Indicates whether the current employer or crew leaders had told the individual during this season about illnesses or injuries that could be due to pesticides.

**Width:** 1

**Type:** Character

**Core:** No

**FAQ:**

**Coding:** 1 = Yes

2 = No

9 = Unknown or not asked

**Comment:** This will allow recording of information regarding aspects of the worker protection standard and training issues. Leave blank for all non-farmworkers.

NOTE: This variable was discontinued as of January 1, 2005.

**WPS3 (CWPS3)** [*Question: This season with your current employer, has your employer/crew leader(s) ever told you about where to go or who to contact for emergency medical care for an illness or injury that happens at work?*]

**Definition:** Indicates whether the current employer or crew leaders had told the individual this season about where to go or who to contact for emergency medical care for an illness or injury at work.

**Width:** 1

**Type:** Character

**Core:** No

**FAQ:**

**Coding:** 1 = Yes

2 = No

9 = Unknown or not asked

**Comment:** This will allow recording of information regarding aspects of the worker protection standard and training issues. Leave blank for all non-farmworkers.

NOTE: This variable was discontinued as of January 1, 2005.

**WPS4 (CWPS4)** [*Question: In the past 12 months has someone taught you about the safe use of pesticides and the use of personal protective equipment?*]

**Definition:** Indicates whether the individual indicated that they had been taught about the safe use of pesticides and the use of PPE in the last 12 months.

**Width:** 1

**Type:** Character

**Core:** No

**FAQ:**

**Coding:** 1 = Yes

2 = No

9 = Unknown or not asked

**Comment:** This will allow recording of information regarding aspects of the worker protection standard and training issues. If they received training on only one of the two components (pesticide safety or use of PPE) code as no. Leave blank for all non-farmworkers

NOTE: This variable was discontinued as of January 1, 2005.

## CASE CLASSIFICATION

**C\_EXPOSE** (CDOCEXP)  
Definition: Describes the level of how laboratory, clinical or environmental evidence that corroborates exposure  
Width: 2  
Type: Character  
Core: Yes  
FAQ: A.1., A.2., A.3., A.4., A.5., A.6., A.13., A.14 (See Appendix C)  
Coding: 1a = analytical results from foliage residue, clothing residue, air, soil, water or biologic samples document exposure  
1b = observation of residue and/or contamination (including damage to plant material from herbicides) by a trained professional  
[Note: a trained professional may be a plant pathologist, agricultural inspector, agricultural extension agent, industrial hygienist or any other licensed or academically trained specialist with expertise in plant pathology and/or environmental effects of pesticides. A licensed pesticide applicator not directly involved with the application may also be considered a trained professional.)  
1c = biologic evidence of exposure (e.g. response to administration of an antidote such as 2-PAM, Vitamin K<sub>1</sub>, or repeated doses of atropine)  
1d = documentation by a licensed health care provider of a characteristic eye injury or dermatologic effects at the site of direct exposure to a pesticide product known to produce such effects (these findings must be sufficient to satisfy criteria B.1 under Adocumentation of adverse health effect@)  
1e = clinical description by a licensed health care provider of two or more post-exposure health effects (at least one of which is a sign) characteristic of the class of pesticides as provided in Appendix 2 of the *Case Definition for Acute Pesticide-Related Illness and Injury Cases*. (See <http://www.cdc.gov/niosh/topics/pesticides/>)  
2a = Evidence of exposure based solely upon written or verbal report by report by case  
2b = Evidence of exposure based solely upon written or verbal report by report by witness  
2c = Evidence of exposure based solely upon written or verbal report by written records of application  
2d = Observation of residue and/or contamination (including damage to plant material from herbicides) by other than a trained professional  
2e = Other evidence suggesting that an exposure occurred  
3 = Strong evidence that no pesticide exposure occurred  
4 = Insufficient data  
Comment: Codes "3" and "4" should be back padded with blanks to fill the two character width.

**C\_EFFECT** (CDOCHEALTH)  
Definition: Level of documentation of post-exposure health effect  
Width: 1  
Type: Character  
Core: Yes  
FAQ: A.9. A.10 A.11. A.12. (See Appendix C)  
Coding: 1 = Two or more new post-exposure abnormal signs and/or test/laboratory findings reported by a licensed health care provider  
2 = Two or more new post-exposure abnormal symptoms were reported. When new post-exposure signs and test/laboratory findings are insufficient to satisfy a score of 1, they can be used in lieu of symptoms toward satisfying a score of 2 for Health Effects (**C\_EFFECT**).  
3 = No new post-exposure abnormal signs, symptoms, or test/laboratory findings were reported  
4 = Insufficient data (includes having only one post-exposure abnormal sign or symptom or, test/laboratory finding).

**C\_CAUSAL** (CDOCCAUSE)  
 Definition: Level of evidence indicating a causal relationship between exposure and illness.  
 Width: 2  
 Type: Character  
 Core: Yes  
 FAQ: A.9., A.10., A.11., A.12. (See Appendix C)  
 Coding: 1a = Where the signs and symptoms documented under the Health Effects criteria (**C\_EFFECT**) are characteristic for the class of pesticide as provided in Appendix 2 of the *Case Definition for Acute Pesticide-Related Illness and Injury Cases*, and the temporal relationship between exposure and health effects is plausible (the pesticide class refers to the one classified under criteria **C\_EXPOSE**). (See <http://www.cdc.gov/niosh/topics/pesticides/>)  
 1b = Where the signs and symptoms documented under the Health Effects criteria (**C\_EFFECT**) are consistent with an exposure-health effect relationship based upon the known toxicology (i.e. exposure dose, symptoms and temporal relationship) of the putative agent (i.e. the agent classified under criteria **C\_EXPOSE**) from commonly available toxicology texts, government publications, information supplied by the manufacturer, or two or more case series or positive epidemiologic studies published in the peer-reviewed literature  
 2 = Evidence of exposure-health effect relationship is not present. This may be because the exposure dose was insufficient to produce the observed health effects. Alternatively, a temporal relationship does not exist (i.e. health effects preceded the exposure, or occurred too long after exposure). Finally, it may be because the constellation of health effects are not consistent based upon the known toxicology of the putative agent from information in commonly available toxicology texts, government publications, information supplied by the manufacturer, or the peer-reviewed literature  
 3 = Definite evidence of non-pesticide causal agent  
 4 = Insufficient toxicologic information is available to determine causal relationship between exposure and health effects. (This includes circumstances where minimal human health effects data is available, or where there are less than two published case series or positive epidemiologic studies linking health effects to exposure to the particular pesticide product or class of pesticides.)  
 Comment: Codes "2" - "4" should be back padded with blanks to fill the two-character width.

**STATUS** (CSTATUS)  
 Definition: Final case classification, using NIOSH classification matrix  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = Definite  
 2 = Probable  
 3 = Possible  
 4 = Suspicious  
 5 = Unlikely  
 6 = Insufficient information  
 7 = Asymptomatic  
 8 = Unrelated  
 Comment: This coding can be set up as an automatic code using the matrix, and should not be overridden. If the state feels the matrix classification is not correct, then the state final classification should be recorded in **USERSTAT**, and a narrative explaining the reason for the classification difference must be included in **USERREAS**. States may choose to add additional codes for their own use to indicate whether asymptomatic individuals had documented exposures, but that level of information is not collected for aggregation of data.

**USERSTAT** (CUSERSTATUS)  
 Definition Final case classification, using state classification matrix, or overriding the NIOSH classification matrix with a written explanation.  
 Width: 1  
 Type: Character  
 Core: No  
 FAQ:  
 Coding: 1 = Definite  
 2 = Probable  
 3 = Possible  
 4 = Suspicious  
 5 = Unlikely  
 6 = Insufficient information  
 7 = Asymptomatic  
 8 = Unrelated  
 Comment: A narrative explaining the reason for the classification difference between **STATUS** and **USERSTAT** must be included in **USERREAS**.

**USERREAS** (CUSERREASO)  
 Definition: Explanation of why the final case classification indicated by **STATUS** and **USERSTAT** are different.  
 Width: 125  
 Type: Character  
 Core: See comments  
 FAQ:  
 Coding: Narrative  
 Comment: This variable must be completed if **USERSTAT** is not blank. This narrative can be as short as needed, and does not need to be written in sentence form.

**SEVERITY** (CSEVERITY)  
 Definition: Final coding of the severity of the case using the standardized criteria of the severity index which can be found at <http://www.cdc.gov/niosh/topics/pesticides/>. A brief description of each of the six severity categories follows.  
 Width: 1  
 Type: Character  
 Core: Yes  
 FAQ:  
 Coding: 1 = Death This category describes a human fatality resulting from exposure to one or more pesticides.  
 2 = High severity illness or injury  
 The illness or injury is severe enough to be considered life threatening and typically requires treatment. This level of effect commonly involves hospitalization to prevent death. Signs and symptoms include, but are not limited to, coma, cardiac arrest, renal failure and/or respiratory depression. The individual sustains substantial loss of time (> 5 days) from regular work (this can include assignment to limited/light work duties) or normal activities (if not employed). This level of severity might include the need for continued health care following the exposure event, prolonged time off of work, and limitations or modification of work or normal activities. The individual may sustain permanent functional impairment.  
 3 = Moderate severity illness or injury  
 This category includes cases of less severe illness or injury often involving systemic manifestations. Generally, treatment was provided. The individual is able to return to normal functioning without any residual disability. Usually, less time is lost from work or normal activities (≥3-5 days), compared to those with severe illness or injury. No residual impairment is present (although effects may be persistent).  
 4 = Low severity illness or injury  
 This is the category of lowest severity. It is often manifested by skin, eye or upper respiratory irritation. It may also include fever, headache, fatigue or dizziness. Typically, the illness or

injury resolves without treatment. There is minimal lost time (<3 days) from work or normal activities.

8 = Evaluated, not applicable

This category indicates that the case data was classified as 'Unlikely', 'Insufficient information', 'Asymptomatic' or 'Unrelated' and the severity index is not applied.

9 = Unknown, not yet evaluated

This indicates that an assessment for the severity index has not been done. It is the default value for a new record.

**Comment:** Refer to the Severity Index for a full description of the purpose of this variable and the method of coding. Note that we recognize that the severity index cannot address all conceivable clinical situations. Therefore, it is not realistic to insist on strict adherence to these. The user must be flexible when using this severity index, given that the user will not infrequently need to employ judgment and experience when assigning severity. If severity is assigned that does not adhere to the index a short narrative explanation should be included in the variable HEALTHCOM. This narrative can be as short as needed, and does not need to be written in sentence form

## APPENDICES

- Appendix A**      **Operational Guidelines for Determination of Injury at Work**
- Appendix B**      **Table of active ingredients considered as solvents and synergist, excluded from consideration when determining insecticide product chemical class (PRODCLAS)**
- Appendix C**      **Frequently Asked Questions (FAQs) - Case Definition and Standard Variables for Surveillance of Pesticide-Related Illness and Injury**

## Appendix A: Operational Guidelines for Determination of Injury at Work

1. Complete the injury at work item if any other than natural cause of death is mentioned in Part I or Part II of the medical certification, including homicides, suicides, and accidents, including motor vehicle deaths.
2. The injury at work item must be completed for decedents ages 14 or over and may be completed for those less than 14 years of age if warranted. Consider possibility of work injury regardless of whether injury occurred in the course of work in "usual" or other occupation and/or industry. If decedent's "usual" occupation is housewife, student or retired consider injury during other employment. If occupation is transportation-related, suspect injury at work and evaluate per criteria.
3. Consider available information with regard to location and activity at time of injury. If location is farm, suspect work-related and evaluate per criteria.

CRITERIA	INJURY AT WORK?	
	Yes	No
On Employer Premises		
• Engaged in work activity, apprentice, vocational training	✓	
• On break; in hallways, rest room, cafeteria, storage area	✓	
• In employer parking lots while working, arriving, or leaving	✓	
• Engaged in recreational activities on employer controlled facilities (games, etc.) for personal enjoyment		✓
• As a visitor for non-work purposes, not on official business		✓
Off Employer Premises		
• Working for pay or compensation, including at home	✓	
• Working as a volunteer EMS, firefighter, or law enforcement officer	✓	
• Working in family business, including family farm. Activity should be clearly related to a profit-oriented business.	✓	
• Traveling on business, including to and from customer/business contacts	✓	
• Engaged in work activity where vehicle is considered the work environment (e.g., taxi driver, truck driver, etc.)	✓	
• Homemaker working at homemaking activities		✓
• Working for self non-profit, i.e. mowing lawn, repairing own roof, hobby or recreation activities		✓
• Student engaged in school activities		✓
• Operating vehicle (personal or commercial) for non-work purposes		✓
• Commuting to or from work site		✓

These guidelines, published in 1992, were developed jointly by: The Association for Vital Records and Health Statistics (AVRHS), the National Institute of Occupational Safety and Health (NIOSH), the National Center for Health Statistics, (NCHS), and the National Center for Environmental Health and Injury Control (NCEHIC).

APPENDIX B

Table B- 1

Solvents and synergists to be ignored when determining Product Chemical Class if the product is an Insecticide and other active ingredients (PC Codes) are present in the formulation.

PC_CODE	PC_NAME
006501	CAS Reg. No. 68477-31-6 ( Distillates (petroleum, catalytic reformer fractionator residue, low-boiling )
006601	Petroleum derived aromatic hydrocarbons
006602	Heavy aromatic naphtha
047501	Isopropyl alcohol
053801	Methyl alcohol
057001	MGK 264
063501	Coal oil
063502	Paraffin oil
063503	Aliphatic petroleum hydrocarbons
063504	Stoddard solvent
063505	Petroleum fuel
063506	Mineral spirits (odorless)
063510	White mineral oil (from 063502)
063511	Fuel oil, no. 1
063512	Fuel oil #4
063513	Fuel oil #6
063514	Diesel fuel #2-D
067501	Piperonyl butoxide
080601	Toluene
086802	Xylene
086803	Xylene range aromatic solvent
128935	Light aromatic solvent naphtha (petroleum) (CAS Reg. No. 64742-95-6)
213400	Alkyl* amine *(100% C18-C22), tert-



## Appendix C: Frequently Asked Questions (FAQs) - Case Definition and Standard Variables for Surveillance of Pesticide-Related Illness and Injury

### A. Case Definition

1. The terms signs and symptoms are used throughout the case definition. What is the difference between the two?

**Answer:** **Signs** are objective findings that can be observed and described by a licensed health care professional. Typically, this is the information one would find in the "physical exam" or "physical findings" section of a medical record, or acute poisoning reporting form. These findings do not rely on the subjective reporting of sensations by the affected individual. An objective knowledgeable observer includes all licensed health care professionals (e.g. MD, DO, PA, RN, EMT etc.).

**Symptoms** are any subjective evidence of a disease or a condition as perceived and reported by the patient. This includes reported changes from normal function, sensation, or appearance. You would find this information in the "History" section of a medical record.

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2. How should we classify the exposure when an affected individual, their coworker or family member indicates that they were "drenched" by pesticide spray?

**Answer:** If there is no other corroborating evidence presented by an objective observer then the information meets criteria "A2". If there is documentation by medical personnel, emergency responders (police, Emergency Medical Technician, etc.), an employer, agency representative, or investigators that the individual was observed to be drenched at the scene or treatment facility this would be classified as meeting criteria "A1b". However, it must be remembered that these observers must be *objective and independent*, and therefore they can not be the affected individual.

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3. How should an exposure be classified when an individual has a dermal exposure that is difficult to document as a direct exposure?

For example: A person handles an object contaminated with pesticides then touches another part of the body with their possibly contaminated hand. The individual then develops a dermal response at the site of hand contact.

**Answer:** If the individual is confident that contact with the pesticide product definitely occurred, and the hand to body part contact occurred shortly afterward, and the dermal response is documented by a licensed health care professional, code the exposure as "A1d" (documentation by a licensed health care professional of a characteristic eye injury or dermatologic effects at the site of direct exposure to a pesticide product known to produce such effects). Code as "A2" (evidence of exposure based solely upon written or verbal report) if the dermal response is not documented by a licensed health care professional. If the history is vague, or contact

may have been with a plant or product other than a pesticide, code as "A4" (insufficient data).

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4. How do we interpret cholinesterase results when performing case classification?

**Answer:** Each state may choose to develop their own internal guidelines. The following very cursory discussion is provided to assist states in this process. Cholinesterase depression is defined as one (or more) of the following:

- 1) 30% depression from baseline (pre-exposure or 60-90 days post exposure) RBC cholinesterase level
- 2) 40% depression from baseline plasma cholinesterase level
- 3) Cholinesterase level below laboratory normal range.

The level of depression may be determined by serial post-exposure testing if a baseline test is not available. (For example - testing 2 weeks and 4 weeks post exposure show a gradual increase in cholinesterase by percentages in 1 and 2 above, over the levels at initial testing.) A test that shows significant depression as described above should be considered evidence of exposure, and ranked as meeting criteria "A1c". It should also be considered evidence for a new post-exposure health effect and helps to meet the criteria for "B1" (an additional post-exposure sign or test/laboratory finding would be needed to fully meet the criteria for "B1"). A test result which does not indicate depression should not be considered an indication that substantial exposure has not occurred. The timing of testing, laboratory variation, the wide normal range, and administration of praloxidime chloride (2PAM) prior to testing can all lead to negative results.

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5. Can the applicator who is directly affected by exposure, or has performed the application that is associated with health effects supply information that can be considered "evaluation by a trained professional" specified in criteria "A1b"?

**Answer:** No. Individuals who are considered professional observers should be objective. An applicator who is the 'case' cannot be considered an objective observer. Nor can an applicator be an objective observer when there are allegations or observations suggesting a misapplication may have occurred. A trained, licensed applicator not directly involved with the case could be an observer under "A1b". For example, a second applicator is called in to help evaluate damage to plants on the property, or to help alleviate odors in an office from an application by another applicator. This second individual's observation can meet the requirements of a trained professional observer as specified in "A1b".

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6. What is the definition of antidote that should be used to evaluate exposure (A1c)?

**Answer:** By antidote, we mean an agent that counteracts the effects of the pesticide. There are two types of antidotes that satisfy this definition: pharmacological antidotes and specific antidotes. Pharmacological antidotes counteract the pharmacological effects of the absorbed pesticide. Often, individuals poisoned with pesticides have a high tolerance to repeated doses of pharmacological antidotes. For example, those poisoned with anticholinesterase pesticides have a high tolerance to atropine. As such, very high doses of atropine are often required to treat individuals poisoned with anticholinesterase pesticides. Another pharmacological antidote is phenobarbital.

Specific antidotes interact directly with absorbed pesticide or some product of it to block the biochemical effect of the pesticide. Examples include pralidoxime chloride (2-PAM), vitamin K, and pesticide-specific monoclonal antibodies that are under development.

Antidotes are not the same as adjunct treatment that may help relieve symptoms or effects of the exposure in a less direct manner. This also does not include agents that prevent absorption of the ingested pesticide (e.g. activated charcoal).

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7. How can we end up with a classification that is different from the clinical diagnosis in the medical record? Isn't that "second guessing" the physician's evaluation of the patient?

**Answer:** The case classification scheme and the clinical diagnosis serve different purposes. The purpose of the case classification scheme is to serve surveillance and epidemiologic-related functions. The classification scheme provides objective guidelines for assessing the certainty of the evidence regarding exposure and health effects. In contrast, the purpose of the clinical diagnosis is to guide the immediate treatment course for the individual. In addition, the clinician may use more intuitive and subjective criteria when making a diagnosis. Therefore, it is possible that the classification category may differ from the clinical diagnosis.

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8. The classification scheme seems too stringent. By excluding individuals who report only one symptom, we may be missing important cases. For example, a child with seizures after DEET exposure would be excluded. How can we address this?

**Answer:** The classification scheme does require the presence of at least two post-exposure symptoms for a report to be considered a case. This may result in the exclusion of a very small number of actual pesticide-related illnesses or injuries. Most concerns about excluding cases due to this criterion can be alleviated by using structured protocols for obtaining medical histories from the individual and/or health care professional. If a single sign or symptom is reported, requesting more details will usually elicit additional signs or symptoms. Asking about commonly related symptoms as part of an interview is an acceptable practice. For example, it is appropriate to ask about symptoms of nausea if an individual reports vomiting; stomach cramping if diarrhea is reported, or loss of consciousness with seizure. This approach should help resolve concerns about the classification system resulting in false negatives.

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9. How do we assess signs and symptoms when an individual has a pre-existing condition that may influence their physiologic response to an exposure?

**Answer:** Few studies have examined the effect of pre-existing disease on the toxicity of pesticides. We are not aware of any studies that found differences in signs and symptoms among pesticide-poisoned individuals with pre-existing conditions. Therefore, if someone presents with an atypical set of symptoms for a particular pesticide, a score of C2 should be strongly considered under "evidence supporting a causal relationship between pesticide exposure and health effects".

However, it is possible that those with some pre-existing conditions will have reduced physiologic reserve. Therefore, these individuals may manifest symptoms at a lower pesticide dose compared to a young, healthy individual. Nonetheless, in these individuals, the signs and symptoms should be characteristic of the particular pesticide, and the temporal relationship should be appropriate.

It is possible that pesticide exposure may exacerbate a pre-existing condition (e.g., organophosphate exposure can cause increased shortness of breath in exposed individuals, including individuals with chronic lung disease). However, the signs and symptoms that are present should be consistent with poisoning from the pesticide in question.

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10. How do we address a situation when the underlying condition may create a set of symptoms that are similar to the symptoms caused by the pesticide?

**Answer:** As has been stated previously, pesticide exposure may exacerbate a pre-existing condition. However, keep in mind that the signs and symptoms that are present should be consistent with poisoning from the pesticide in question. In addition, there should be an appropriate temporal relationship (i.e. exposure preceded the health effect and the latency between exposure and effect is appropriate), and the pesticide exposure should be of sufficient dose.

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11. How do we determine whether the evidence for an exposure-health effect relationship is insufficient versus inconsistent?

**Answer:** When there is little literature on the health effects associated with a particular pesticide and none of it describes the health effects of interest, then the evidence for an exposure-health effect relationship is considered "insufficient" and a score of "C4" is appropriate. However, if there are many references on the health effects associated with a particular pesticide, and none describe the health effects of interest, then the evidence for an exposure-health effect relationship is considered "inconsistent" and a score of "C2" is appropriate.

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12. The term "exposure dose" is used in section C (Evidence supporting a causal relationship between pesticide exposure and health effects). Often little information is available on dose. How should we interpret "dose"?

**Answer:** The use of this term refers to whether the dose was sufficient to produce the observed health effects. Unfortunately, there is a paucity of data available on the minimum dose of a pesticide needed to produce health effects in humans. In addition, reaction to a pesticide exposure can vary across individuals. It should be remembered that some individuals may be much more sensitive to a pesticide and manifest health effects at a much lower dose compared to other individuals. Other factors such as duration of exposure, use of protective equipment, amount of time between exposure and collection of the environmental sample, and the effect of intervening weather conditions on environmental samples and observations must be factored in when evaluating the actual "exposure dose" likely experienced by the individual. When available, the peer-reviewed literature should be examined for guidance. The judgment of colleagues in the State Department of Agriculture may also be helpful

When dealing with self-reports, qualitative information on exposure dose can be obtained. For example, information can be obtained about proximity to the source of exposure, duration of exposure, did health effects manifest in others who were exposed, etc. Assessing this information may require experience and the assistance of other knowledgeable colleagues.

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**13.** Often we learn that an individual was exposed to a particular functional class of pesticides (e.g. insecticide, herbicide, etc.), but we can't determine the name of the product or the active ingredient. Should an exposure score of "A2=written or verbal report" or "A4=insufficient data" be assigned?

**Answer:** When only the pesticide class is known, a score of "A4=insufficient data" must be assigned. This is because the pesticides within a particular class can vary widely in toxicity. Therefore, it would be impossible to determine if any observed health effects are consistent and or characteristic with the pesticide exposure. However, if the chemical class of the pesticide is known (e.g. organophosphate, or carbamate), but the specific pesticide product or active ingredient is unknown, a score of "A1" or "A2" can be considered. This is because pesticides within a specific chemical class can produce similar health effects (see Appendix 2).

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**14.** Can documentation or a clinical description "by a licensed health care professional" as specified in criteria "A1d", "A1e" and "B1", be provided by the licensed health care professional who is directly affected by exposure (please note that this is similar to question Q5)?

**Answer** No. Individuals who are considered professional observers should be objective. A health care professional who is the 'case' cannot be considered an objective observer. A licensed health care professional not directly involved in the exposure event would meet the criteria under "A1d", "A1e" and "B1".

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**15.** If an individual was exposed to a product whose active ingredient is an organophosphate, but which is also 97-98% fertilizer, and they develop a skin rash after exposure. Should this exposure be included as a case with exposure-health effect as consistent with the known toxicology of the product or excluded because it is probably

the fertilizer that caused the reaction, not the pesticide in the product?

**Answer** Since the fertilizer components are part of the pesticide formulation the exposure should be included in determining whether the rash is related to the product exposure. Do not list the organophosphate as the causative ingredient. Indicate the product as a causative agent and add a note to the health comments that the illness was thought to be caused by components of the formulation other than the organophosphate active ingredient. (This same approach should be used for cases where a solvent or carrier component of the product is the likely causative agent)

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## B. Standard Variables

1. How should a case be entered and tracked by a surveillance program if an individual has a pesticide exposure in one state, receives initial medical care in that state, then is discharged to follow-up care in a different state? (For example: a long haul trucker exposed while transporting chemicals in one state, who then receives follow-up care in the state where s/he lives.)

**Answer:** The case should be entered into the data system of any surveillance program that receives a report. States have different guidelines on confidentiality and case follow-up when cooperating with another state's health agency. These guidelines must be followed. The state where the exposure occurred can usually best address issues related to the exposure and prevention, and often has better access to reporter records (e.g. PCC, health care professional) and regulatory agency reports. However, health care professionals located in a state other than where the exposure occurred may be reluctant to cooperate with an investigation by a state other than the one where they practice. There may be duplication of cases in the national aggregated dataset if the case is reported to the surveillance program in the state where exposure occurred and is unaware that the case was also reported to the program in the case's state of residence. This should not be a major concern since it is a rare event. To minimize the duplication of cases arising under this scenario, relevant states should attempt to determine which state will take "ownership" of the case.

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2. How should the variable "application target" be coded if the product is misapplied (e.g., man uses a fogger in a car). Is the application target the car interior (intended target of applicator), or building surface (intended target according to the product label)?

**Answer:** The application target is used to code the intended target of the applicator not the targets specified on the product label. For the situation described, you can code the car as the target. This would not be included under building surface category, since it is not really a building or room, and falls outside of the label description. Since a specific code for "vehicle" does not exist for this variable, this application target would be coded as "850=other".

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3. A carpentry crew was exposed to herbicides while repairing railings adjacent to a flowerbed. The herbicide was applied before the carpentry crew began their work but

it was never incorporated into the soil. The carpentry crew worked for approximately 1 week in and around the treated flowerbed. They experienced health effects related to the exposure. Which of the *Exposure Type* variables should be coded as yes; CONTACT or SURFACE?

**Answer:** Code the variable SURFACE as "Yes". It appears that these workers were exposed to a treated surface (i.e. flowerbed). In contrast, code CONTACT as "No". "Contact" exposures have more of an accidental/emergency quality involving direct contact with the concentrated or diluted pesticide product (i.e. cleaning up pesticide spills; a pesticide applicator using a leaking container; falling into a puddle of pesticide, etc).

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4. How should LOSTTIME be coded for an agricultural worker who was ill in bed all weekend following a work-related exposure. The worker lost no work time, but lost normal activity all weekend

**Answer:** If this individual routinely would not have worked on the weekend then LOSTTIME should be coded as "2 No lost work time". If the person usually worked on the weekend but was unable to work due to exposure-related illness, then LOSTTIME should be coded as "1 Yes, lost work time".

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5. How should activity at time of exposure (ACTEXPIND) be coded for situations where an individual was exposed to an insecticide that they or someone else applied to their skin?

**Answer:** If the individual applied the pesticide to themselves or another individual the activity should be coded as 11 = *applying pesticide to human skin, hair or clothing*. The application target (APPTARGET) should be coded with a code in the range of 700-703.

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6. If a mix/loader was preparing to spray an apple orchard and spilled pesticide during the mixing/loading operation, and therefore never actually sprayed the orchard should the APPTARGET be coded 113=Pome Fruits or 998=Application not involved?

**Answer:** In this situation since the individual was in the preparation process for spraying and the intended target is the apples, APPTARGET should be "113=Pome fruits." The same holds true for a situation where individuals are exposed from drift. The intended target should be coded. This coding will allow the state to track problems associated with mixing, loading and applications associated with this particular crop. If the intended target is unknown, code APPTARGET as 'unknown'.

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7. If there is a spill of pesticides while product is in transit, e.g. a lawncare truck on a highway involved in a vehicular accident with the contents spilling, how should APPTARGET be coded?

**Answer:** In this scenario, APPTARGET should be coded as "998=N/A - application not involved" since there was no application, nor were the lawncare workers engaged in activities (e.g. loading and mixing) to prepare for an imminent application.

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8. The standard variable coding indicates that the variable APPLICTR should be coded '**4 Unlicensed, adult not under supervision of licensed applicator during application**' if the setting is a private home and the homeowner is using an over-the-counter (OTC) pesticides. Why isn't this coded **N/A** since the homeowner wouldn't need to be licensed? Likewise we are directed to code a child handling an OTC pesticide and exposing himself or others in his own home as **5 Unlicensed child (16 years old or younger) not under supervision of licensed applicator during application** rather than **N/A**.

**Answer** We'd prefer to code these situations as 4 and 5 respectively, as we instruct in the standardized variable document. This is because if we have several illness cases associated with an OTC pesticide, APPLICTR data may suggest the need for the pesticide to be restricted to licensed applicators. If APPLICTR is coded as NA (8) in these cases, we'll need to dig through the narrative comments to figure out who performed the application and whether they were licensed. That type of effort may be too time-consuming to undertake, and may lead to a failure to recognize that the pesticide should be restricted.

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9. What is the definition of 'incidental exposures' in the comments that describe situations which should be coded as "not applicable" for the variable PPE?

**Answer** Incidental exposures are exposures that would not be expected when the individual is conducting their regular activity. This includes circumstances when an individual might know that pesticides were used, but they would not usually wear any PPE. Thus, agricultural workers contacting plant material after a reentry interval has expired would expect to work without PPE and not have a problem. Other common incidental exposures include:

- office workers or home owners exposed to residue from structural or surface treatment after any reentry period
- individuals in a retail establishment where a spill has occurred, if they are not involved in the actual clean-up
- individuals handling pets that have been flea dipped by a pet groomer