SafeBridge CONSULTANTS, INC.

Steps to Investigating Occupational Disease Incidents Involving "Potent Compound" Exposures

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Occupational exposure and alleged health effects situations are complex and contain several components which may include physical, psychological and emotional effects on workers potentially exposed or effected. A thorough investigation is required with an objective of both solving the problem technically and communicating the risk effectively. Risk communication techniques are a learned skill and careful thought and planning should be given to how a situation will be communicated from the beginning of the investigation. Because of the nature of hazardous chemicals and perceptions regarding their use, these situations have been described as "Low Trust/High Concern" environments where people may be reacting emotionally rather than logically[1].

Primary Incident Investigation Steps

1. Interview all relevant parties and record names, dates, times, locations and operations involved in the incident.
2. Document all alleged symptoms.
3. Document all chemical agents in use.
    a. Are there only finished active pharmaceutical ingredients (APIs) involved or are there also isolated intermediates?
    b. What reagent chemicals are present?
    c. What cleaning agents or methods may be involved?
4. Document for each worker the personal protective equipment (PPE) worn during the time in question. Provide details of specific chemical protective clothing, gloves, eyewear and respiratory protection.
5. Detail the exposure controls in place. Provide descriptions of local exhaust ventilation including chemical hoods, biosafety cabinets, powders weighing hoods, engineered hoods around equipment, plain end openings (elephant trunks or drops). Provide details of containment systems in place including isolators, glove boxes, glove bags, vertical processing trains and valves, ventilated enclosures, etc.
6. Review all possible routes of exposure including inhalation, skin absorption, ingestion and inadvertent contact with mucous membranes after contacting chemicals.
7. Employ medical staff to assist in medical health issues resolution.

Data Assessment & Data Interpretation Steps

1. Prepare a timeline linking dates and times working with substances in question to onset of symptoms for each potential causative agent.
2. Research documented health effects based on exposure to substances in question through review of MSDSs, literature review, PDR, on-line databases, RTECS, etc.
3. Discuss characteristics of the substances in question (particularly if novel compounds) with laboratory workers and researchers that may have handled the substances previously. Determine if any unreported health effects have occurred in this group. Determine if any health effects are reported in the literature for the substances in question.
4. Discuss health status of affected persons with medical staff (as appropriate).
5. Account for frequency of potential exposure, duration of potential exposure, relative concentration of substances in question and potential absorption for each affected individual.
    a. Determine if these factors correlate to the types of symptoms and the severity of symptoms reported.
    b. Determine what individuals have not been affected that may be in the same area or near the incident area and if and how their exposure may be different.

Reaching a Supportable Conclusion

1. Determine, if possible, if there is a "cause and effect" including a relationship between reported health effects, documented effects in the literature, onset of symptoms and any potential latency period.
2. Account for individual variability. A "perfect fit" may not be the case where every potential exposure results in the same effect.
3. Determine if "powers of suggestion" are a factor among individuals with questionable potential exposure.
4. Determine a scientifically plausible position or explanation to present to the affected parties and to the management and supervision.
5. Assess who will be "blamed" for the situation. This may require private discussions with senior management prior to broader distribution of findings. Anticipate the questions that may come from all parties involved. Trust and credibility of the management involved is likely to be eroded after an occupational disease incident. Thought should be given to how that trust will be rebuilt as the situation is evolving.
6. Any exposure situation should be viewed as a potential for litigation. Take appropriate steps to maintain confidentiality of all discussions, notes and written reports.

Risk Communication

1. Conduct a risk communication meeting with all affected parties (stakeholders).
2. When communicating to a group of affected workers be sure to use the following established risk communication techniques and prepare yourself thoroughly with answers to anticipated questions.

a. Show empathy to affected individuals and individuals who have significant concerns. Management may have to say, “We are sorry”.
b. Let the group ask as many questions as they wish after introducing the subject. Don’t answer questions on-the- spot. Explain to the audience that you will attempt to answer all questions after hearing what they have to say.
c. Record questions on a flip chart or through other means that are visible to the audience (show them that you care and show them that you are listening). Confirm with participant that you have recorded the gist of their question accurately.
d. After audience is finished expressing questions and concerns, present your prepared remarks and work in answers to questions as you go. Make eye contact with persons asking questions and elaborate answers as necessary.
e. Make three major points or messages and keep them positive and relatively simple. Avoid “scare words” (toxic, cancer, contaminated, hazardous, dangerous) and negative works (no, never, not, can’t, won’t) in your messages. Try to keep messages to twelve words or less. Memorize messages and repeat them several times to the audience (at beginning, middle and end of presentation).
f. If you can’t answer a question, be sure to say, “I don’t know but I will try to find out”. Set a time or deadline for feedback on the unanswered question.

3. Develop a summary of the risk communication to document the outcome of any risk communication meetings.

[1]. Covello, V.T., P.M. Sandman, P. Slovic, + “Risk Communication, Risk Statistics, Risk Comparisons: a Manual For Plant Managers”, unpublished course syllabus.

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