

# 12

## Health and safety practices for health-care personnel and waste workers

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### 12.1 Principles

Health-care waste management policies or plans should include provision for the continuous monitoring of workers' health and safety to ensure that correct handling, treatment, storage, and disposal procedures are being followed. Essential occupational health and safety measures include the following:

- proper training of workers;
- provision of equipment and clothing for personal protection;
- establishment of an effective occupational health programme that includes immunization, post-exposure prophylactic treatment, and medical surveillance.

Training in health and safety should ensure that workers know of and understand the potential risks associated with health-care waste, the value of immunization against viral hepatitis B, and the importance of consistent use of personal protection equipment.

Workers at risk include health-care providers, hospital cleaners, maintenance workers, operators of waste treatment equipment, and all operators involved in waste handling and disposal within and outside health-care establishments.

### 12.2 Workers' protection

The production, segregation, transportation, treatment, and disposal of health-care waste involve the handling of potentially hazardous material. Protection against personal injury is therefore essential for all workers who are at risk. The individuals responsible for management of health-care waste should ensure that all risks are identified and that suitable protection from those risks is provided.

A comprehensive risk assessment of all activities involved in health-care waste management, carried out during preparation of the waste management plan, will allow the identification of necessary protection measures. These measures should be designed to prevent exposure to hazardous materials or other risks, or at least to keep exposure within safe limits. Once the assessment is completed, personnel should receive suitable training (see Chapter 13).

#### *12.2.1 Protective clothing*

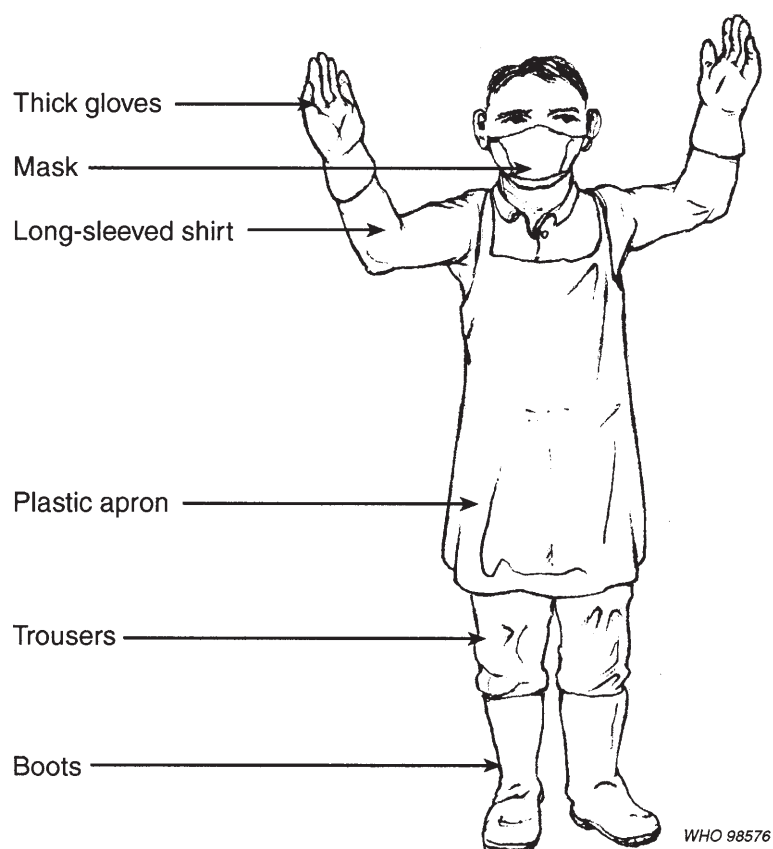
The type of protective clothing used will depend to an extent upon the risk associated with the health-care waste, but the following should be made available to all personnel who collect or handle health-care waste:

- Helmets, with or without visors—depending on the operation.
- Face masks—depending on operation.
- Eye protectors (safety goggles)—depending on operation.
- Overalls (coveralls)—obligatory.
- Industrial aprons—obligatory.
- Leg protectors and/or industrial boots—obligatory.
- Disposable gloves (medical staff) or heavy-duty gloves (waste workers)—obligatory.

Industrial boots and heavy-duty gloves are particularly important for waste workers. The thick soles of the boots offer protection in the storage area, as a precaution from spilled sharps, and where floors are slippery. If segregation is inadequate, needles or other sharp items may have been placed in plastic bags; such items may also pierce thin-walled or weak plastic containers. If it is likely that health-care waste bags will come into contact with workers' legs during handling, leg protectors may also need to be worn. An example of the protective clothing recommended in Thailand is shown in Fig. 12.1.

Operators of manually loaded incinerators should wear protective face visors and helmets. During ash and slag removal and other operations that create dust, dust masks should be provided for operators.

***Fig. 12.1*** *Recommended protective clothing for health-care waste transportation in small hospitals in Thailand<sup>a</sup>*



<sup>a</sup>Source: *Handbook of hazardous healthcare waste management in 10-bed and 30-bed community hospitals, Thailand*. Bangkok. Ministry of Health, 1995; adapted with permission.

### 12.2.2 *Personal hygiene*

Basic personal hygiene is important for reducing the risks from handling health-care waste, and convenient washing facilities (with warm water and soap) should be available for personnel involved in the task. This is of particular importance at storage and incineration facilities.

### 12.2.3 *Immunization*

Viral hepatitis B infections have been reported among health-care personnel and waste handlers, and immunization against the disease is therefore recommended. Tetanus immunization is also recommended for all personnel handling waste.

### 12.2.4 *Management practices*

Many of the management practices recommended in Chapters 6 and 7 contribute to a reduction in risk for personnel who handle health-care waste; these are summarized as follows:

- *Waste segregation*: careful separation of different types of waste into different and distinct containers or bags defines the risk linked to each waste package.
- *Appropriate packaging*: prevents spillage of waste and protects workers from contact with waste.
- *Waste identification* (through distinct packaging and labelling): allows for easy recognition of the class of waste and of its source.
- *Appropriate waste storage*: limits the access to authorized individuals only, protects against infestation by insects and rodents, and prevents contamination of surrounding areas.
- *Appropriate transportation*: reduces risks of workers being exposed to waste.

### 12.2.5 *Special precautions for clearing up spillages of potentially hazardous substances*

For clearing up spillages of body fluids or other potentially hazardous substances, particularly if there is any risk of splashing, eye protectors and masks should be worn, in addition to gloves and overalls.

Respirators (gas masks) are also needed if an activity is particularly dangerous, for example if it involves toxic dusts, the clearance of incinerator residues, or the cleaning of contaminated equipment.

Residues should be recovered as completely as possible using hand tools (e.g. a shovel), and then packed safely. It is especially important to recover spilled droplets of metallic mercury. If a leakage or spillage involves infectious material, the floor should be cleaned and disinfected after most of the waste has been recovered.

### 12.2.6 *Response to injury and exposure*

A programme of response should be established that prescribes the actions to be taken in the event of injury or exposure to a hazardous substance. All staff who handle health-care waste should be trained to deal with injuries and exposures. The programme should include the following elements:

- immediate first-aid measures, such as cleansing of wounds and skin, and irrigation (splashing) of eyes with clean water;
- an immediate report of the incident to a designated responsible person;
- retention, if possible, of the item involved in the incident; details of its source for identification of possible infection;
- additional medical attention in an accident and emergency or occupational health department, as soon as possible;
- medical surveillance;
- blood or other tests if indicated;
- recording of the incident;
- investigation of the incident, and identification and implementation of remedial action to prevent similar incidents in the future.

In case of a needle stick injury, bleeding of the wound should be encouraged and the area should be washed under clean running water. The remaining elements of the accident response plan should then be followed.

The purpose of incident reporting should not be seen as punitive; active support by managers should encourage prompt and accurate reporting.

### **12.3 Cytotoxic safety**

The senior pharmacist of the health-care establishment should be designated to ensure safe use of cytotoxic drugs. Large oncological hospitals may appoint a full-time Genotoxic Safety Officer, who should also supervise the safe management of cytotoxic waste. The following key measures are essential in minimizing exposure:

- written procedures that specify safe working methods for each process;
- data sheets, based on the supplier's specifications, to provide information on potential hazards;
- established procedure for emergency response in case of spillage or other occupational accident;
- appropriate education and training for all personnel involved in the handling of cytotoxic drugs.

These measures are unlikely to be needed in rural or urban district hospitals of middle- and low-income countries, which do not typically use genotoxic products, either cytotoxic or radioactive. In countries where the safe use of cytotoxic and radioactive materials is difficult to ensure, it may be advisable for use of those substances to be limited to a small number of specialized (e.g. oncological) hospitals, that are better able to implement appropriate safety measures.

In hospitals that do use cytotoxic products, specific guidelines on their safe handling should be established for the protection of personnel. These guidelines should include rules on the following waste handling procedures:

- separate collection of waste in leak-proof bags or containers, and labelling for identification;
- return of outdated drugs to suppliers;
- safe storage separately from other health-care waste;

- provisions for the disposal of contaminated material, for the decontamination of reusable equipment, and for the treatment of spillages;
- provisions for the treatment of infectious waste contaminated with cytotoxic products, including excreta from patients and disposable linen used for incontinent patients.

More information on the treatment and disposal of cytotoxic waste is given in section 9.3, and specific procedures to follow in case of spillages of, or contamination by, mutagenic and carcinogenic products are proposed in Annex 4.

Hospital staff should ensure that the families of patients undergoing chemotherapy at home are aware of the risks and know how they can be minimized or avoided.

Minimal protective measures for all waste workers who handle cytotoxic waste should include protective clothing, gloves, goggles, and masks.

### **References and suggested further reading**

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