

APPENDIX 15-A

DECONTAMINATION AND DISPOSAL OF INFECTIOUS WASTE

Definition of Infectious Waste from Laboratories

Infectious waste is defined as waste capable of producing an infectious disease. For a waste to be infectious, it must contain pathogens with sufficient virulence and quantity so that exposure to the waste by a susceptible host could result in an infectious disease. Infectious waste from laboratories includes cultures and stocks of infectious agents, including items contaminated with infectious agents, such as disposable culture dishes and devices used to transfer, inoculate, and mix cultures; human blood and blood products; animal carcasses, body parts, and bedding contaminated with infectious agents; sharp items, such as needles, syringes, broken glass, Pasteur pipets, and scalpel blades, contaminated with infectious agents.

Decontamination Methods

General. North Carolina medical waste rules (15A NCAC 13 B .1200), require that "Regulated Medical Waste", defined as "blood and body fluids in individual containers greater than 20 ml, microbiological waste, and pathological waste, must be treated before disposal in order to render the waste nonhazardous. Infectious waste is to be treated to change its biological character so as to reduce or eliminate its potential for causing disease. The most commonly used effective treatment method for the laboratory is steam sterilization (autoclaving). Steam sterilized liquid wastes may be discharged directly to the sanitary sewer (if in accordance with the University sewer disposal policy). Procedures for disposal of solid wastes following steam sterilization are given under "Steam Sterilization Procedures". Laboratories with infectious wastes not specifically addressed by this document (such as waste with multiple hazards, e.g. radioactive infectious waste) should consult with the Health and Safety Office for treatment and disposal methods.

Cultures and Stocks. Cultures and stocks of infectious agents, and items contaminated with cultures are to be steam sterilized prior to disposal in the regular trash. Liquids may be poured down the sanitary sewer after steam sterilization.

Human blood and blood products. Since most laboratories have access to autoclaves, human blood and blood products are to be steam sterilized prior to disposal. If this is not feasible the Health and Safety Office should be consulted for alternate disposal methods. Both the CDC (1,2) and EPA (4) allow for the disposal of human blood down the sanitary sewer. When this is done, care is to be taken to avoid splash and the drains are to be flushed with generous amounts of water. The Health and Safety Office is to be contacted for approval of disposal methods other than autoclaving.

Contaminated animal carcasses, body parts, and bedding. Animal carcasses are disposed of through the Department of Laboratory Animal Medicine (966-3111). Animal carcasses, body parts, and bedding from animals inoculated with infectious agents, are disposed of by autoclaving (small animals only) or by incineration. Carcasses contaminated with radioisotopes or carcinogens are picked up by the Health and Safety Office.

Contaminated glass and sharps. Contaminated glass and sharps are to be steam sterilized prior to disposal. Needles and syringes are to be placed directly into one gallon metal cans available from the UNC Scientific Storeroom, stock number SP28700, and steam sterilized. To prevent needlestick injuries, needles are not to be recapped, purposely bent, broken, or otherwise manipulated by hand. After autoclaving, containers of sharps are to be disposed of in a cardboard box lined with a plastic bag, clearly marked with the "GLASS AND SHARPS" label (found at ehs.unc.edu/labels/).

Steam Sterilization Procedures

1. Infectious wastes are to be accumulated in durable leak proof containers lined with red or orange autoclavable bags. The outer container must be of such a design so as not to be mistaken by Housekeeping as regular trash. Glass items must be autoclaved separately and then placed in the glass and sharps container. Plastic pipets are to be containerized to prevent bag puncture. The universal biological hazard symbol must be displayed on the bags and outer container. Since the outer container may also be contaminated, both the bag and the outer container should be autoclaved. Transfer of heat is more efficient when smaller waste loads are autoclaved and when stainless steel containers are used rather than polypropylene (3). Waste materials that are to be decontaminated at a site away from the laboratory are to be transported in closed containers.
2. The autoclave is to be operated at 121°C (250°F) or higher for a minimum of 15 minutes. Most waste loads require much longer exposure times for the interior to reach the required temperature. Autoclaving for 45 minutes is recommended for destruction of vegetative bacteria in a 10 to 15-lb. (approximately 135-205 100-mm Petri plates) waste load (3). Some autoclaves are equipped to operate at higher temperatures, which would allow for shorter exposure times.
3. For effective treatment, the critical factor is the degree of steam penetration. For steam to penetrate throughout the waste load, the air must be completely displaced from the treatment chamber. To facilitate steam penetration, bags are to be opened and bottle caps and stoppers loosened before placement in the steam sterilizer.
4. N. C. medical waste rules state that autoclaves are to be provided with a chart recorder which accurately records time and temperature for each cycle. Monitoring under conditions of full loading for effectiveness should be performed at least once per week

