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APPROVED TREATMENT METHODS

The State of Ohio has specific methods or technologies that must be utilized for the treatment of infectious wastes generated by large generators (≥ 50 lbs. of infectious waste generated in any one month) and cultures generated by small generators (< 50 lbs. of infectious waste generated per month). The purpose of this document is to summarize the approved methods of treatment, the **operational** requirements of each method, and any quality assurance required for each method.

Incineration

APPROVED METHOD: Incineration of infectious waste must occur in a controlled **air multichamber incinerator** which provides complete combustion of the waste, excluding metallic, glass, and ceramic. Any ash which does not meet this criteria must be re-incinerated. A minimum temperature of **1200°F** in the primary chamber and **1600°F**, with a minimum residence time of one second, in the secondary chamber must be maintained. All incinerators must have auxiliary burners which are capable of maintaining the secondary chamber temperature at the minimum 1600°F **excluding** the heat content of the waste.

OPERATIONAL REQUIREMENTS: All incinerators must have copies of the following documentation at the incinerator site and have trained their operators in these areas: infectious waste and air pollution regulations, incinerator's air and infectious waste permits, manufacturer's specifications and maintenance procedures, infectious waste containment and spill procedures, quality control **procedures**, standard operating procedures, and contingency procedures. The loading operations or the use of a mechanical feeding device into the incinerator must not result in the compaction or puncture of containers of infectious waste unless the feeding system is enclosed. Incinerators must not be charged beyond design capacity. Any leakage or discharge of wastewater resulting from storage, treatment, or ash management must be collected and discharged in accordance with Chapter 6111. of the Ohio Revised Code. Access to any storage areas, loading or unloading areas, decontamination areas, incinerator areas, or ash storage areas must be restricted to authorized personnel. All unloading, processing, and storage areas of infectious waste and ash, incineration, and decontamination areas must be paved with reinforced concrete or asphalt and have drainage into a disposal system as defined in Chapter 6111. of the Ohio Revised Code. Prior to disposal, a treatment facility must determine whether the ash resulting from incineration is a solid or hazardous waste and hence must dispose of the ash appropriately. Incinerators that utilize **air** pollution control devices must capture particulate, either wet or dry, in leakproof containers. No infectious waste incineration facility can accept hazardous waste as defined in Chapter 3734. of the Ohio Revised Code.. No waste prohibited from incineration by the U.S. EPA, the Ohio Department of Health, or the U.S. NRC can be accepted for incineration.

QUALITY CONTROL: All incinerators must continuously monitor and record the temperature of the primary and secondary chamber. These recordings must be kept in a quality control log for a minimum of three years. Samples of incinerator ash (both bottom and fly) must be tested quarterly for the presence of metals utilizing the EP Toxicity Characteristic for Metals methodology provided in the "U.S. EPA Test Methods for Evaluating Solid Waste, Third Edition(SW846)," method number 1310. The Ohio EPA may, upon written notification, require an incineration facility to sample stack gas after adding spores of *Bacillus subtilis* species. All testing must be preformed by an independent laboratory. A permanent record of all maintenance to the incinerator must be kept in a maintenance log.

Autoclaving

APPROVED METHOD: Autoclaves used to treat infectious waste must be **operated** at a minimum temperature of 121°C or 250°F at a minimum of 15 pounds/in² pressure. All autoclaves must operate at the specified temperature and pressure for 60 minutes. Other combinations of time, temperature, and pressure can be used to treat infectious waste provided the achievement of the performance standard is demonstrated by validation testing in accordance with paragraph (K)(3)(e) of OAC Rule 3745-27-32. All autoclaves must have a permanent temperature recorder.

OPERATIONAL REQUIREMENTS: All autoclaves must have copies of the following documentation at the autoclave site and have **trained** their operators in these areas: infectious waste and air pollution regulations, autoclave's air and infectious waste permits, **manufacturer's** specifications and maintenance procedures, infectious waste containment and spill procedures, quality control procedures, standard operating procedures, and contingency procedures. No autoclave may be loaded beyond the design capacity. Written operating **procedures** for each autoclave must be posted in the immediate area of the autoclave. These written procedures must address such operating parameters as time, temperature, pressure, general type of waste, general type of container, closure of container, pattern of loading, maximum load quantity, and liquid content. Access to any storage areas, loading or unloading areas, decontamination areas, **autoclave** areas, or treated waste storage areas must be restricted to authorized personnel. All unloading, processing, storage areas of infectious waste and treated infectious waste, autoclave, and decontamination areas must be paved with reinforced concrete or asphalt and have drainage into a disposal system as defined in Chapter 6 111. of the Ohio Revised Code. No infectious waste autoclave facility can accept hazardous waste as defined in Chapter 3734. of the Ohio Revised Code. No waste prohibited **from** autoclaving or incineration by the U.S. EPA, Ohio Department of Health, or the U.S. NRC can be accepted for autoclaving.

QUALITY CONTROL: Each autoclave unit must **have** a log that contains the date, time the cycle started, time the cycle ended, the operator. All autoclaves must be evaluated for effectiveness of treatment using spores of Bacillus stearothermophilus each **month** that the autoclave is utilized for treatment of infectious waste. The spores must be placed at the position in the autoclave determined to have the lowest temperature during a full load cycle according to the manufacturer's **specifications**. Permanent temperature recordings must be kept in a quality control log for a minimum of three year!;. A permanent record of all maintenance to the autoclave must be kept in a maintenance log.

Chemical Treatment of Cultures

APPROVED METHOD: The approved chemical treatment solution are chlorine compound solutions, such as sodium hypochlorite. Chlorine compounds must be used at a strength of 15% **volume/volume** (a 1:6 dilution of household bleach).

OPERATIONAL PROCEDURES: All cultures must be submerged for a minimum of 20 minutes or longer. All chemical treatment solutions must be prepared immediately prior to use, and discarded immediately after use. All excess chemical solution must be decanted from cultures before disposal.

Sharps Disposal System

APPROVED METHODS: The Disposal Sciences thermal treatment technology is approved for the treatment of sharp infectious wastes and must be used in conjunction with the manufacturer's designated sharps collection device. Sharp infectious wastes to be treated must consist of not less than 70% plastic by weight. Sharp infectious wastes may contain only residual liquids.

OPERATIONAL PROCEDURES: The thermal unit must be operated in a well ventilated area, preferably vented to the outdoors. The power to the unit must not be purposely interrupted at any time. The waste plug must be treated as an infectious waste if any indication of malfunction or inadequate heating has been observed.

QUALITY CONTROL: Every 50 cycles, or at a minimum semi-annually, biological testing must be performed on the unit. This testing must consist of placing a spore strip of at least a minimum population of 1.0×10^4 of *Bacillus subtilis* in a glassine envelope, without additional waste, and allowing the unit to complete a heating cycle. The treated strip must then be aseptically transferred to the appropriate culture media and incubated under appropriate conditions to determine survival. The results of the biological indicator testing must be kept in a log. Each unit must have a log which contains the date and time that the cycle is started. All maintenance or repairs to the unit must be kept in a dated log.

For further information, please contact the local health department, Ohio EPA District Office, or the Infectious Waste Unit, Division of Solid and Infectious Waste Management, Ohio EPA at (614) 644-2917.

Effective 3/13/98 replaces 5/8/92



District Offices

CDO **Central District Office**
 3232 Alum Creek Drive
 Columbus, Ohio 43207-3417
 (614) 728-3778
 1-800-686-2330

SEDO **Southeast District Office**
 2195 Front Street
 Logan, Ohio 43138
 (740) 385-8501
 1-800-686-7330

NEDO **Northeast District Office**
 2110 E. Aurora Road
 Twinsburg, Ohio 44087
 (330) 963-1200
 1-800-686-6330

SWDO **Southwest District Office**
 401 East Fifth Street
 Dayton, Ohio 45402-2911
 (937) 285-6357
 1-800-686-8930

NWDO **Northwest District Office**
 347 North Dunbridge Road
 Bowling Green, Ohio 43402
 (419) 352-8461
 1-800-686-6930

Toll free numbers are for citizens with questions or concerns about environmental issues. The regulated community should use the business line for routine business. Spills and emergencies should be reported to 1-800-282-9378.