FACT SHEET

Sonicator Safety

Sonicators are high-frequency sound generators used to disrupt cells or shear nucleic acids. Laboratory personnel must be concerned about two of the major hazards associated with sonicators. The first hazard is hearing damage caused by high frequency sound. The second hazard is the generation of aerosols from the sonication process.

Sonicators generate sound waves in the 20,000 Hz range. These sonicator-generated sound waves are outside the normal range of hearing. Often the sound heard while using a sonicator is produced by cavitations of the liquid in the sample container or vibrations from loose equipment. Actions you can take to reduce the hazards include:

- Wear earphone-type sound mufflers to protect your hearing while sonicating.
- If possible, have the sonicator located in a "sound-proof" cabinet while sonicating.
- Do not sonicate in a room containing people not wearing ear protection.
- Shut doors of the room where sonication is taking place.

Blending, Grinding, Sonicating, Lyophilizing

The greatest hazard when using sonicating and other equipment to disrupt cells or shear nucleic acids is the creation of aerosols.

These aerosols are generated by cavitations of the sonicator horn in the sample media and mechanical mixing.

The following guidelines should be followed.

- **Blenders, grinders, sonicators, lyophilizers, etc. should be operated in a biosafety cabinet whenever possible.**
- **Safety blenders should be used. Safety blenders are designed to prevent leakage from the bottom of the blender jar and to withstand sterilization by autoclaving. They also provide a cooling jacket to avoid biological inactivation.**
- **Avoiding using a glass blender jar. If a glass jar must be used, it must be covered with a polypropylene jar to contain the glass in case of breakage.**
- **A towel moistened with disinfectant should be placed over the top of the blender while operating. This practice can be adapted to grinders and sonicators as well.**
- **Aerosols must be allowed to settle for five minutes before opening the blender jar (or grinder or sonicator container).**
- **Lyophilizer vacuum pump exhaust should be filtered through HEPA filters or vented into a biosafety cabinet.**
- **Polypropylene tubes should be used in place of glass ampoules for storing biohazardous material in liquid nitrogen. Glass ampoules can explode, causing eye injuries and exposure to the biohazardous material.**
- **Blending, grinding or sonicating materials that are infectious or potentially infectious must be performed in a Biological Safety Cabinet.**

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