

## Safe Handling of Cell lines (07/11/2007)

Cell lines (cell cultures) are commonly used in biological and biomedical research laboratories. Although cell lines do not inherently pose a risk to lab workers, certain safe handling precautions must be taken because of their potential to harbor pathogenic organisms. In general, cell lines can be contaminated with bacteria, fungi, mycoplasma, viruses and prions. Human cell lines may pose the greatest risk.

In 1991, the Occupational Safety and Health Administration (OSHA) issued the Bloodborne Pathogens (BBP) Standard to protect employees who have occupational exposure to human blood or other potentially infectious materials. At that time there was no stated policy on the safe handling of human cell lines.

In 1994, OSHA issued an interpretation of the applicability of the BBP Standard towards human cell lines. According to the interpretation, human cell lines are considered to be potentially infectious and within the scope of the BBP Standard unless the specific cell line has been characterized to be free of hepatitis viruses, HIV, Epstein-Barr virus, papilloma viruses and other recognized bloodborne pathogens. Also, the Fourth Edition of the CDC publication, *Biosafety in Microbiological and Biomedical Laboratories* (BMBL), recommends that human and other primate cells should be handled using Biosafety Level 2 (BSL2) practices and containment.

Given these advisories, I recommend that all cell and organ cultures of human origin, including well established cell lines, shall be handled in accordance with the OSHA Bloodborne Pathogens Standard and under Biosafety Level 2 (BSL2) containment. I ask that you read BMBL Appendix H (attached) and recommend the following specific handling protocols:

For cell lines that are not transformed with viruses, all waste solutions (e.g. spent media) and unused cells should initially be decontaminated with 10% "premium bleach" at final concentration\*. Spent media and unused cells should be in contact with the 10% bleach solution for at least 24 hours. This liquid should then be autoclaved. Disposable plastics (plates, tubes, etc) and other solids should be placed in doubled orange biohazard bags and autoclaved. Work surfaces (especially in the flow hood) should be decontaminated with a disinfectant (e.g. Envirocide) before and after working with cell lines.

For cell lines that have been transformed with viruses, waste solutions should be decontaminated as described above. Contaminated plastics should be treated in bleach immediately after use and then autoclaved.

\* Premium bleach is defined as having a hypochlorite concentration of at least 5.25% hypochlorite. Some house brands might only be 3% and some brands like Wal-Mart brand do not list the percentage.