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Incubation

TECHNICAL BULLETIN

A Step By Step Guide to: SAFE CELL UV Understanding Cell Culture Protocols and Real Time Cell Protection

The purpose: Real time cell protection of a culture environment optimizes conditions for cell growth that is more consistent than competitive systems.

Why this is Important:

• Researchers often need to produce the same quality of cell lines (efficient replication and transformation properties) for research in both the present and future. As researchers develop working models to experiment with later, equivalent environmental conditions are required.
• Efficiency, integrity and robustness of cell lines can be correlated to the maintenance of a constant uniform environment that is working proactively to produce stable and homogeneous conditions.
• Efficiency and stringency conditions are important for improving selections of highly productive clones that are used as viable biological products after incubation.

Cell Culture Parameters & Requirements:

1. Cell Culture Volume

Determine the volume of cell cultures grown and used by the customer.
• The greater the volume of cell cultures, the harder it is to maintain a stable environment due to desiccation and environmental factors increasing the possibility of cross contamination.

2. Cell Culture Type

Identify whether the lab is using human or nonhuman cells.
• Human cells are more sensitive and will be more prone to contamination
• Sensitive cell lines require close to perfect conditions without any interruption of changes in pH, CO_2 and O_2 levels.

3. Incubation Time

Determine the amount of time their cell cultures are incubated. Longer periods will have a greater possibility of contamination.
• UV is in effect every 12 hours if there are no door openings (as opposed to little or minimal effect of class A HEPA, which is known to collect bacterial contaminants and allow for dispersion throughout the chamber).
-If the end user has trusted HEPA, ask them when the last time the filter was changed and how long it is supposed to last for.
• Air quality of the chamber is a vital component of maintaining a uniform cultural environment.

4. Differentiate between Copper Coated and Copper Alloy

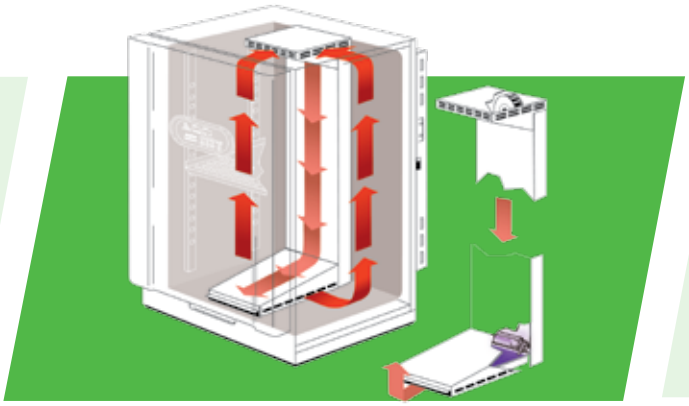
Copper alloy has completely different properties for the increased antibacterial effect.
• Copper coating degrades after repeated heat sterilization cycles.
• Corrosion of copper coating creates a surface that is more adherent and susceptible to the proliferation of bacterial biofilm.

5. Environmental Conditions

Determine how pH, CO_2 and O_2 are affected by environmental conditions.
• These parameters can be changed from low to high levels of contamination by a change in the air quality of the laboratory environment.
• Cultures should be healthy with a viability of >90% and no signs of microbial contamination.
• Cultures should be in a log phase of growth (below their maximum cell density).

6. Physiochemical Properties:

The Physiochemical Environment controls pH, temperature, and dissolved oxygen concentrate.
• Small changes in pH can have a profound effect on cell growth and productivity.
• The effects are cell line specific and can impact:
-maximum cell concentration
-integral viable cell hours
-specific production rate
-metabolism (lactate accumulation)



safe cell UV