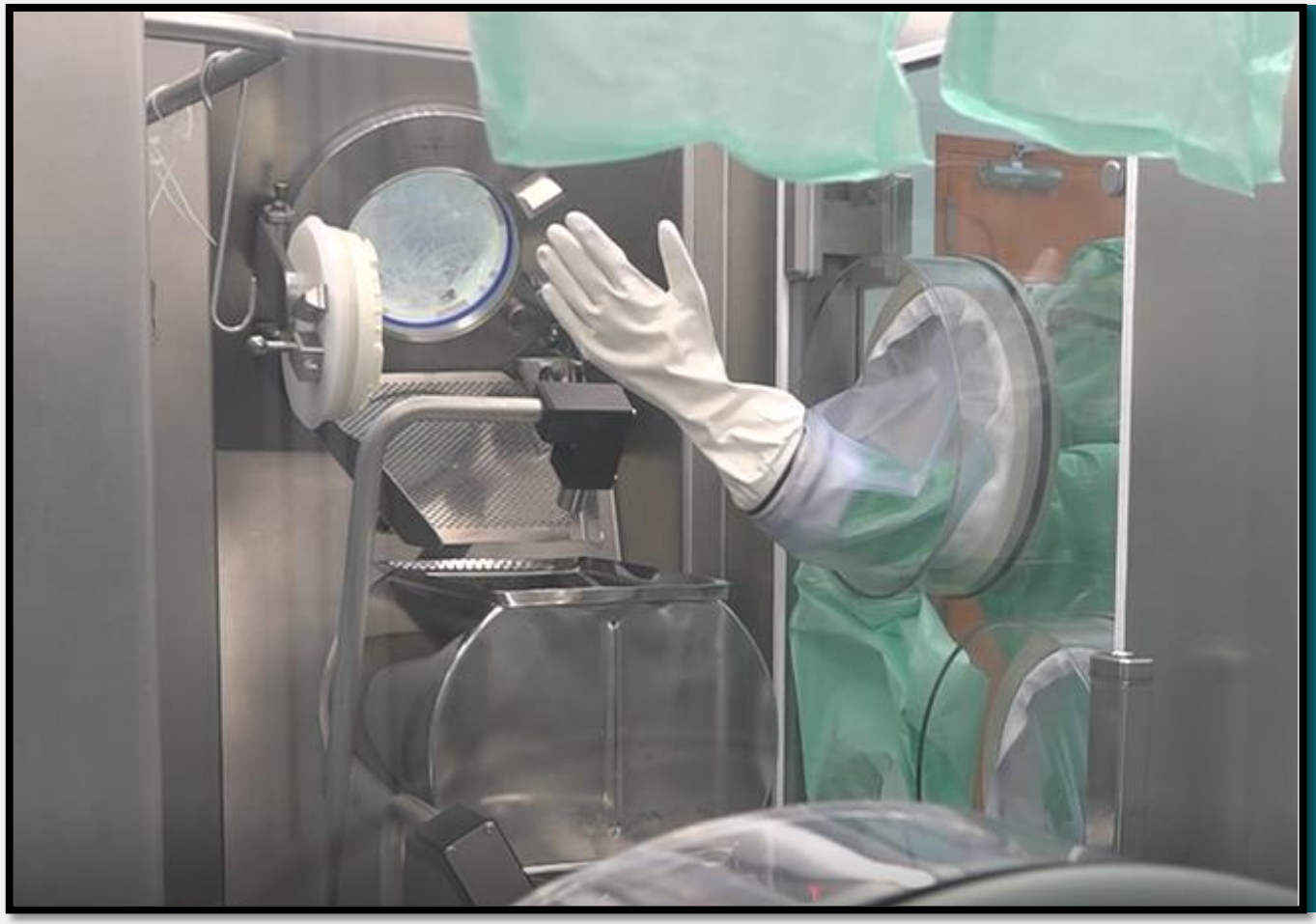

Aseptic Practices
and correlations with Smoke studies and media fill

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Content

What, How and Why

- Aseptic practices
- Some thoughts
- Main source of contaminations
- Personal hygiene
- Aseptic practices - thumb rules, gown control, material control
- Aseptic practices - correlation with smoke study and media fill

What, how and why Aseptic Practices ?

Aseptic practices are a set of procedural ***behavior*** *to* ***prevent contamination*** *into a* ***sterile*** *products, components, critical area, contact parts to ensure that it is* ***free from any living micro-organism*** *and* ***its spore***

Approach and practice(s) should be in such a manner to minimise potential risk of the microbial, particulate and pyrogen contamination in the critical processes, product, microbial analysis and environment (Critical zone) during its handling and interventions *supported with* ***facility, design, technology knowledge, experience, training*** *and* ***attitude***

Patient safety

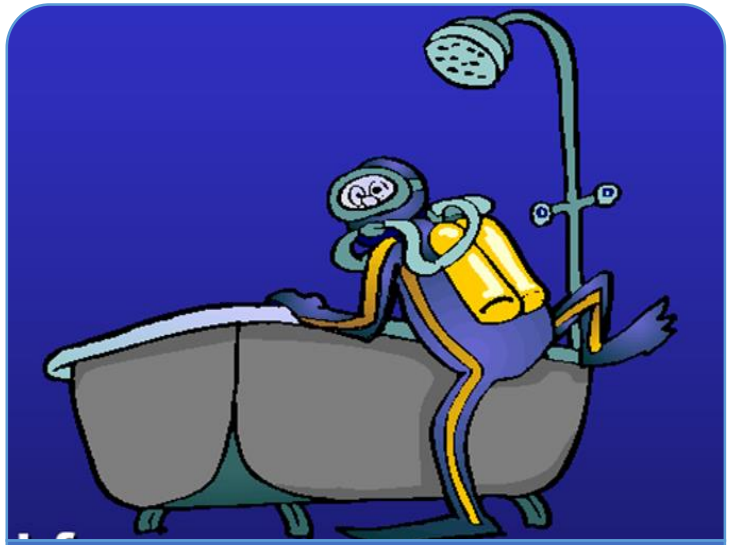
Particles may get into the product, which **can then cause** inflammation, allergic reactions or blockage of blood vessels leading to tissue damage

* Particles may carry microorganisms that may contaminate the product, which may then cause an infection in the patient.

*** Patient's life can be at risk due to use of contaminated product.**

Some thoughts…

Let us not make it difficult… manual aseptic practices are very risky….

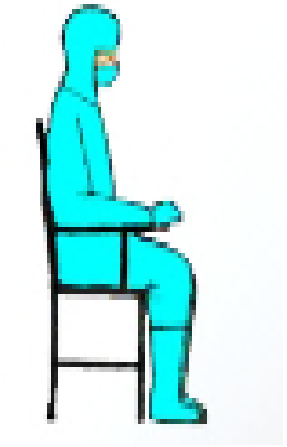


Risk based approach with use of technologies

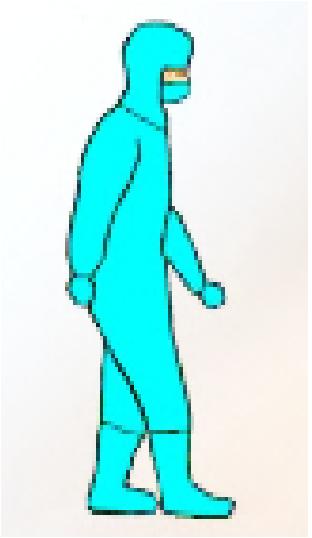
Attitude of a pilot:
Passenger safety

Ours is Patient safety

Main source of contamination



Sitting quietly
100,000(1 lac)



Moving
1,000,000(10 lacs)

Walking
5,000,000(50 lacs)

Particles shed per minute ……

People are responsible for 80% of particles in clean room

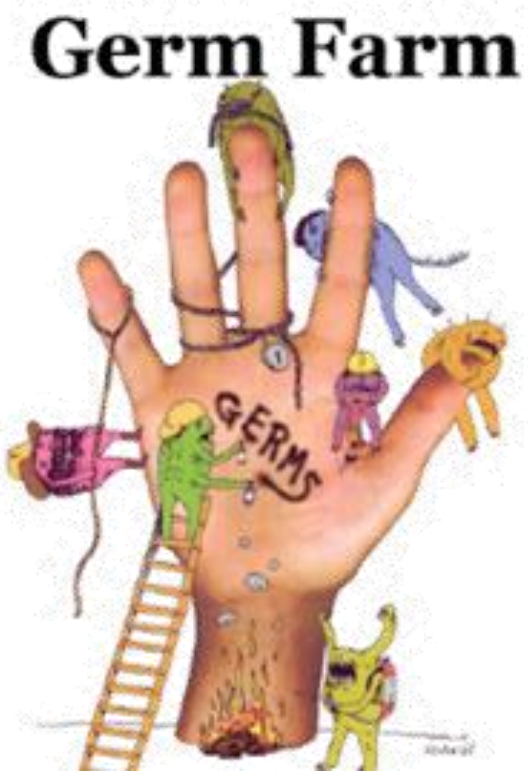
A fully clothed adult emits 9×10^6 particles in the size range 0.5 to 100 micron (µm) every minute

People are considered the greatest source of contamination in the manufacturing of sterile products.

Over the past decades, substantial progress has been made in **separating the operator from the critical areas within the aseptic manufacturing suite**.

Barrier technologies, such as **isolators and RABS are helpful. However aseptic practices has to be** continued with use of isolators and RABS as well

It starts from home and personal hygiene

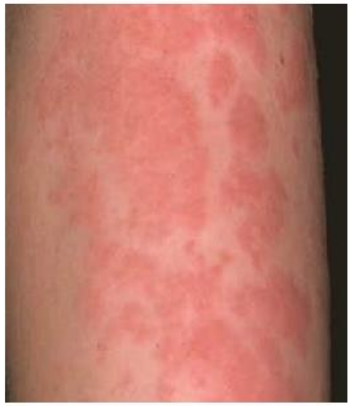


Personnel:

Would you let these people into your processing area ?








Hygiene rules: Personal Hygiene - starts from home.

- **Regular bathing/showering – every day (preferably twice)– removes skin cells that carry microorganisms**

- **Hands should be <u>washed with soap and water</u> before entering the clean room:**

  - **After using the toilet**
  - **After smoking**
  - **After all meal breaks**
  - **During each entry**

<u>Sanitization of hands never replaces hand wash</u>….

<u>Hand wash is a must….</u>

Aseptic practices – Thumb rules

No personal accessories e.g. any kind of jewellery, wrist band, watch, cosmetic, keys, cards, personal medicine etc. are allowed in aseptic or its auxiliary room

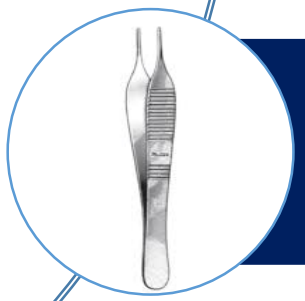
No street clothes to be brought into the change room leading to Grade C and/or B area. All of the street clothes to be removed in primary change room while entering the block/plant. Fresh and clean full body covering inner gowning to be donned in primary change room. A separate primary change for grade C and B area is preferable.

Gloved hands are not sterile i.e. even if with use of sterile gloves and sanitizing with sterile disinfectant it can not be considered as sterile. Hence, **no sterile contact parts to be touched with gloved hand(s)**

Aseptic practices – Thumb rules

Aseptic interventions should be made in **first air**

First Air: Refers to filtered air that has not been interrupted by items/people (such as operators, sanitized surface) with the potential to add contamination to the air prior to reaching sterile contact parts/surface



Contact sterile materials only with sterile instruments (Between uses, sterile instruments should be held under Grade A conditions maintained in a manner that prevents contamination (e.g., placed in sterilized containers/holder by keeping **the tip of the forceps/scissor towards LAF/HEPA surface**)

Aseptic practices – Thumb rules

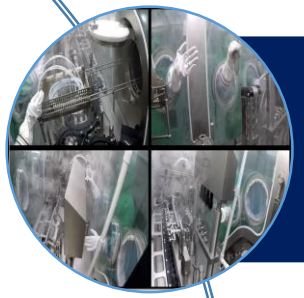
Move slowly and deliberately

(Rapid movements can create unacceptable turbulence in a critical area. Such movements disrupt the unidirectional airflow and thereby contamination from floor level can come up to the working level and body/gown parts can shed particles

The **slow movement** must be a practice. The **routine practice should be consistent with smoke studies and media fill**

<u>Do NOT</u> make it robotic. It should be slow and without shaking of body parts, hands and head etc. Robot shakes its parts/hands/heads… that's not good

Aseptic practices – Thumb rules



The operator must be shown the video of air flow/smoke studies for all interventions, aseptic actions and to be trained to follow approved aseptic technique/interventions as done air flow pattern studies

The **same aseptic practices/technique** and/or interventions to be followed for **smoke studies, successful media fill and routine operations**

Position marking for man, material on floor and intervention access points marking on machine/cubicle door, glove ports for each type of intervention. Example in next slide…..

Aseptic practices – Thumb rules

Why to follow below aseptic practices ?

Forcep Tip towards HEPA/ LAF

Door and Glove port location to be identified for types of interventions – to be same as smoke study and media fill

Mark position for Operator on floor prior to smoke study, media fill. Same to be consistent in routine.

Slow and deliberate Movement with hands above working height

Aseptic practices – Thumb rules

Aseptic technique is equally applicable to isolators, closed restricted access barrier systems and/or open restricted barrier system/conventional filling lines.

Aseptic interventions **should be approached from the side** and not above the product (in vertical unidirectional flow operations).

Operators should **refrain from speaking when in direct proximity** to the critical zone/area

Aseptic practices – Thumb rules

If Grade A zone machine/hard partition door opens/exposed into grade B, then the inner side of the door must be disinfected by sterile wet wipes/sterile 70% alcohol. Also disinfection/sanitization required for any conveyor coming out of Grade A and before going back to Grade A.

Grade A continuity to be ensured from point of sterilization till integration of each component e.g. till final capping, sealing/making the container closure integral. If required mobile LAF cart with un-interrupted power supply and with NVPC monitoring can be used

For isolator, all parts/components are to be sterilized in autoclave / other suitable means and to be transferred inside the isolator. It can be semi assembled and without removal of bacterial barrier paper/Tyvek wrapper from critical contact parts.

Note: In isolator, the decontamination cycle can do decontamination of surface and will not be able to sterilize it. Post decontamination cycle, the final wrapper from tip, stopper bowl cover etc. to be removed through glove port.

Aseptic practices – Thumb rules

Personnel entry to critical area must be **restricted** to qualified and authorized people. It should be **minimized.** Each room to be qualified with peoples presence as per equal/worst case to that of allowed maximum number of people into a particular room.

In addition to restricting personnel entry to critical areas, it should monitored, recorded and reviewed regularly

Hard register / biometric record / Electronic smart access control can be helpful

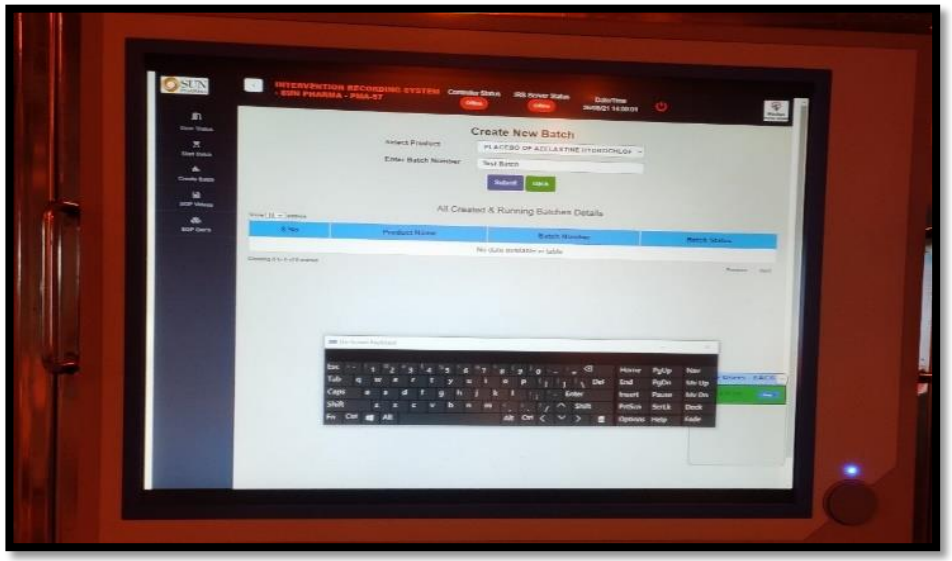
Smart Access Control System (SACS) for personnel access restriction and Personnel entry in the Aseptic area/ rooms.

Aseptic practices – Thumb rule

<u>Type, frequency and duration</u> of each aseptic intervention must be restricted, monitored, recorded and reviewed

All interventions must be simulated / conducted in airflow pattern/smoke study and also in successful media fill. Based on which it should be controlled through procedure for its type, frequency and duration

Electronic Intervention recording system(IRS) can be useful for such record and its review



Intervention Recording System (IRS) for tracking and recording of the Aseptic Interventions in Filling Line

Aseptic practices – Thumb rule

Frequent sanitization – sanitized hands above working height.

After initial gowning, sterile gloves should be regularly sanitized or changed, as appropriate, to minimize the risk of contamination. A defined minimum frequency /time period for glove sanitization should be established

Do not touch wall or other sanitized surface

Personnel should not directly contact sterile products, containers, closures, or critical surfaces with any part of their gown or gloves

Aseptic practices - Gown control

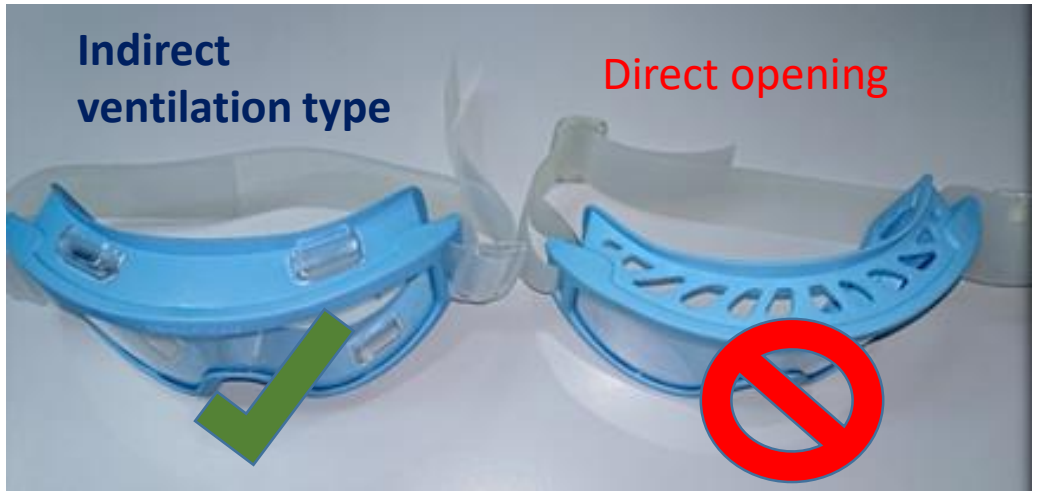
- Prior to and throughout aseptic operations, an **operator should not engage in any activity that poses an unreasonable contamination risk to the gown.**
- Only personnel who are **qualified and appropriately gowned should be permitted access to the aseptic** manufacturing area.
- Gown/Garment used in clean room/critical area should comply to standard mentioned in IEST-RP-CC003.4
- Gown must be used within validated hold time. No. of washing and sterilization limit of garments to be validated and defined
- Do not touch any exposed part of gown while donning it. While preparation for sterilization, sterile gowns must be folded in such a way that it will be easier for operator to hold it from inside while wearing it.
- Goggles are to be indirect ventilation type(no direct opening to environment) and should be sterilized prior to use

Institute of Environmental Sciences and Technology

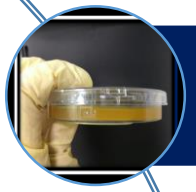
IEST-RP-CC003.4

Contamination Control Division
Recommended Practice 003.4

Garment System Considerations for Cleanrooms and Other Controlled Environments



Aseptic practices – Material control



<u>Anything entering critical Grade A, B area/Grade A zone must be sterile for aseptic processing</u>

If sterilization of some surfaces are not feasible for some sterile items, then disinfection/sequential wrap removal by a validated method

Material should travel with one grade up cascade and with series of disinfection at each grade and/or removal of wrapper for tripped / double wrapped sterile items e.g. Unclassified to D, D to C, C to B and finally B to A

All materials are to be pre-approved with procedural control and any other additional material required to transfer inside aseptic area/critical zone to be reviewed and approved by quality. Record of entry of all materials to be maintained and reviewed.

Use of VHP passbox or E-beam tunnel, rapid transfer port are advanced aseptic processing design. Based on risk assessment these design should be implemented

Correlation of aseptic practice with air flow pattern/smoke studies and media fill

1. Risk assessment of aseptic process
2. Type, frequency and duration of aseptic intervention to be determined through a protocol i.e. based on minimum 25 batches data or 6 months whichever is more + brain storming for expected interventions.
3. Location of interventions e.g. door, glove ports, man and material position
4. No. of personnel and activity based qualification
5. The set up chronology, practices of slow moment to be defined with training and SOPs

1. High risk operations should not be justified with smoke study
2. **Type and duration** of each interventions in dynamic condition with multi-angle camera to be evaluated as determination through aseptic intervention evaluation protocol
3. Location of interventions e.g. door, glove ports, man and material position to remain same as determined
4. No of personnel performed any particular intervention to remain same.
5. . The set up chronology, practices of slow moment to be same as defined in SOP and routine

1. High risk operations should not be justified with successful media fill
2. **Type, duration and frequency** of each interventions in dynamic condition to remain same or more as determined with protocol for aseptic practices
3. Location of interventions e.g. door, glove ports, man and material position to remain same as determined
4. No of personnel performed any particular intervention to remain same or more as worst case
5. The set up chronology, practices of slow moment to be same as defined in SOP and routine and to be consistent with aseptic practices and smoke study

Important notes

Excess number of interventions on any aseptic processing lines should trigger investigation and corrective action needed to reduce those. It should not be justified by successful smoke study and/or media fill

With use of best of the technologies, design and/or facilities can reduce risk only if appropriate aseptic practices are performed and qualified

Excellence should be a habit

Patients safety is our ultimate goal….


Thank
you