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Guide to Single-Use Training Series: Part 2

Single-Use Technologies, Their Implementation Strategies and Regulatory Perspectives

Presented by

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The Process is King

- Components support the process…
- Proper use (installation and maintenance) ensure a successful process

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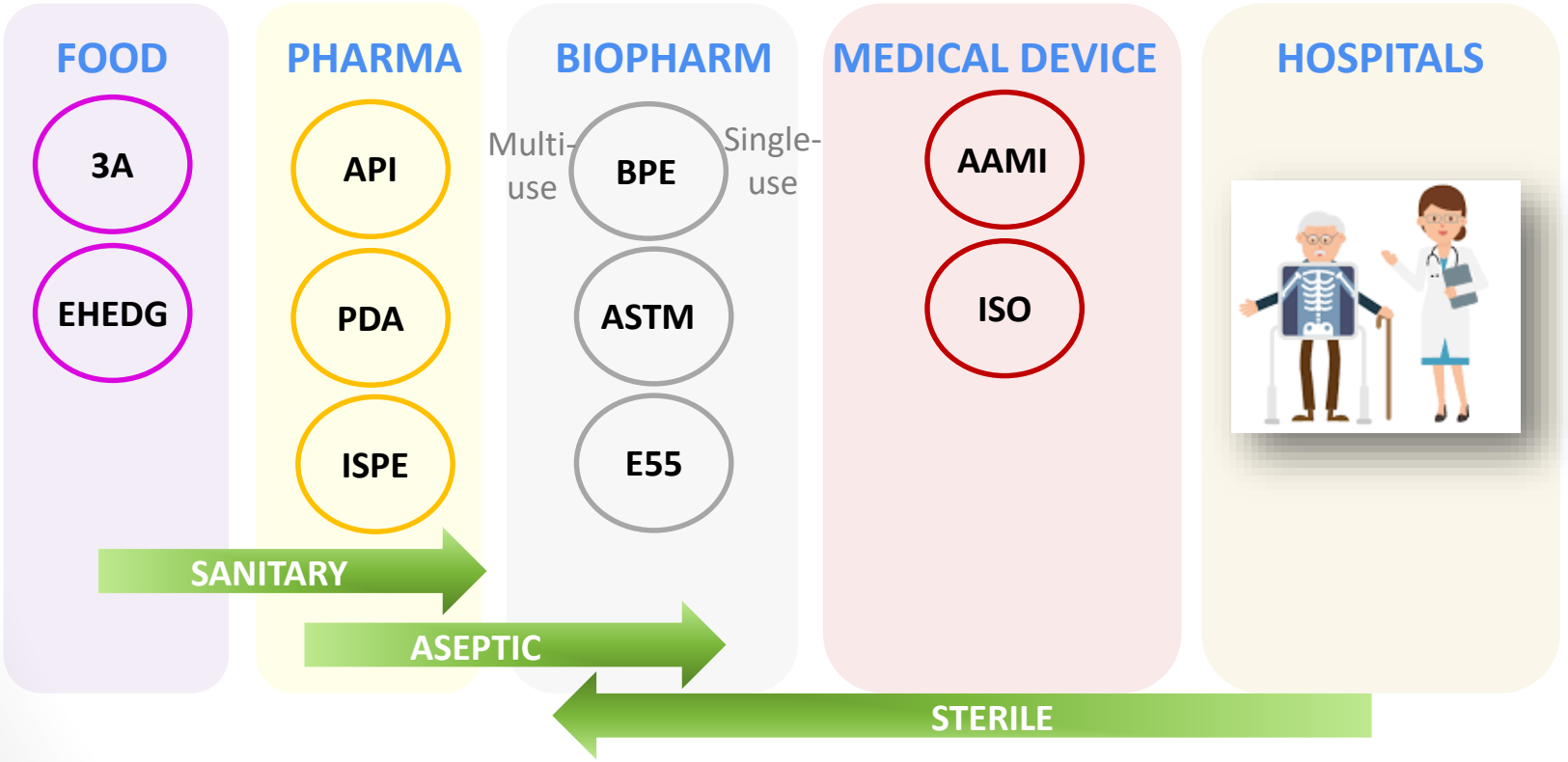
Process Needs and Regulatory

- Cells do not care if it is multi- or single-use
- Proteins do not care if it is SS or SUT
- Keep the cells HAPPY!
- Treat them well [per regulations]:
  - safety
  - identity
  - strength
  - quality
  - purity

Food and Medical Device Lead into What BioPharm is Doing



Single-Use *vs.* Multi-Use

Why is one approach used instead of the other?

Same Process: The drug product is processed using similar operations in both cases (e.g. product is purified using affinity chromatography)

Same Goal: In both cases, the processing equipment ***shall not adulterate the product***. Both type systems need to provide a clean and sterile environment

Different Approach: Multi-use cleanability/sterility is validated by end-user. Single-use cleanability/sterility is validated by manufacturer

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Actions for Reducing Risk in BioPharmaceutical Products

- Closed Process
- Cleaning/Sterilization
- Single-Use/Sterilization
- Virus inactivation

Cell And Gene Therapy Processes

- Smaller Scale-Few liters at best
- Open process
  - Biological Safety Cabinet
  - Tissue Culture
  - Pipette Transfers
  - IV transfer kits
- Single Use
  - Closes the Process
  - Reduce the number of manual handling steps and
  - More reproducible process
  - Automation
  - Easier to scale-up scaled out/up for later-stage clinical testing commercial-scale

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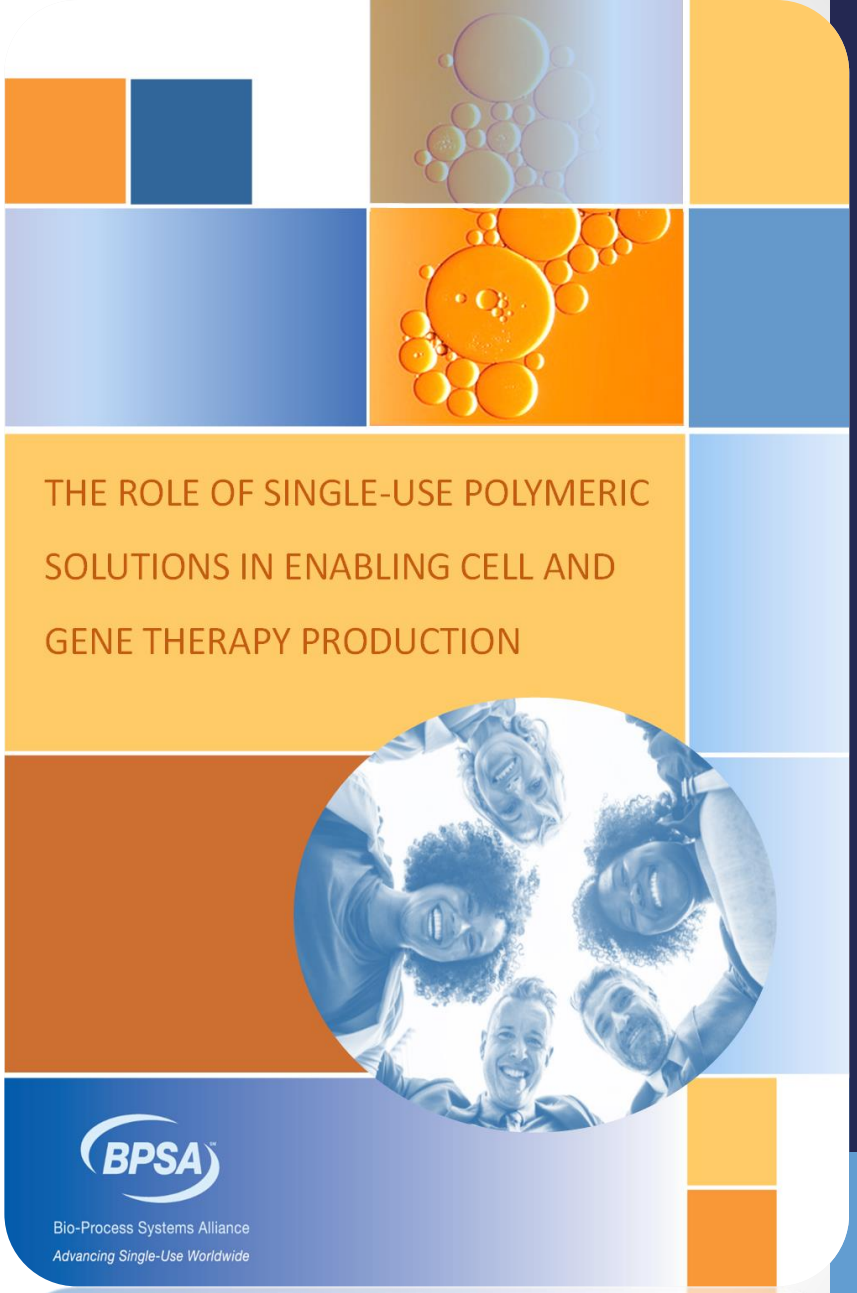
The Role of Single-Use Polymeric Solutions in Enabling Cell and Gene Therapy Production



BPSA

Bio-Process Systems Alliance

Advancing Single-Use Worldwide

Requirements: Single-Use *vs.* Multi-Use

Requirement	Single-use component	Multi-use component
Biocompatibility	Required evaluation USP<87>, USP<88> Class VI	Requires evaluation USP<87>, USP<88> Class VI
Sterility	Supplier sterilizes product via e.g. gamma irradiation. Validation per ISO 11137. Supplier certifies sterility	Design should not hinder the ability of the device to be CIP/SIP, but supplier does not validate/certify cleanability/sterility
Extractables & Leachables	Required E&L profile to characterize MOCs	Typically not a consideration
Integrity	Required evaluation	Only for pressure holding devices
Particulates	Required evaluation (USP<790>, USP<788>)	Typically not a consideration
Endotoxins	Required evaluation (USP<85>)	Typically not a consideration
Shelf-life	Required evaluation (ASTM F1980)	Applicable to some components only (e.g., diaphragms, gaskets)
Manufacturing environment	Qualified cleanroom (usually ISO 7)	No requirements
ISO Certification	ISO 13485	ISO 9001 desirable

Sterilization Risk FDA-Caution!

Sterile drug manufacturers *(and Single-Use Suppliers)* should have a keen awareness of the public health implications of distributing a nonsterile product. Poor CGMP conditions at a manufacturing facility can ultimately pose a life-threatening health risk to a patient.

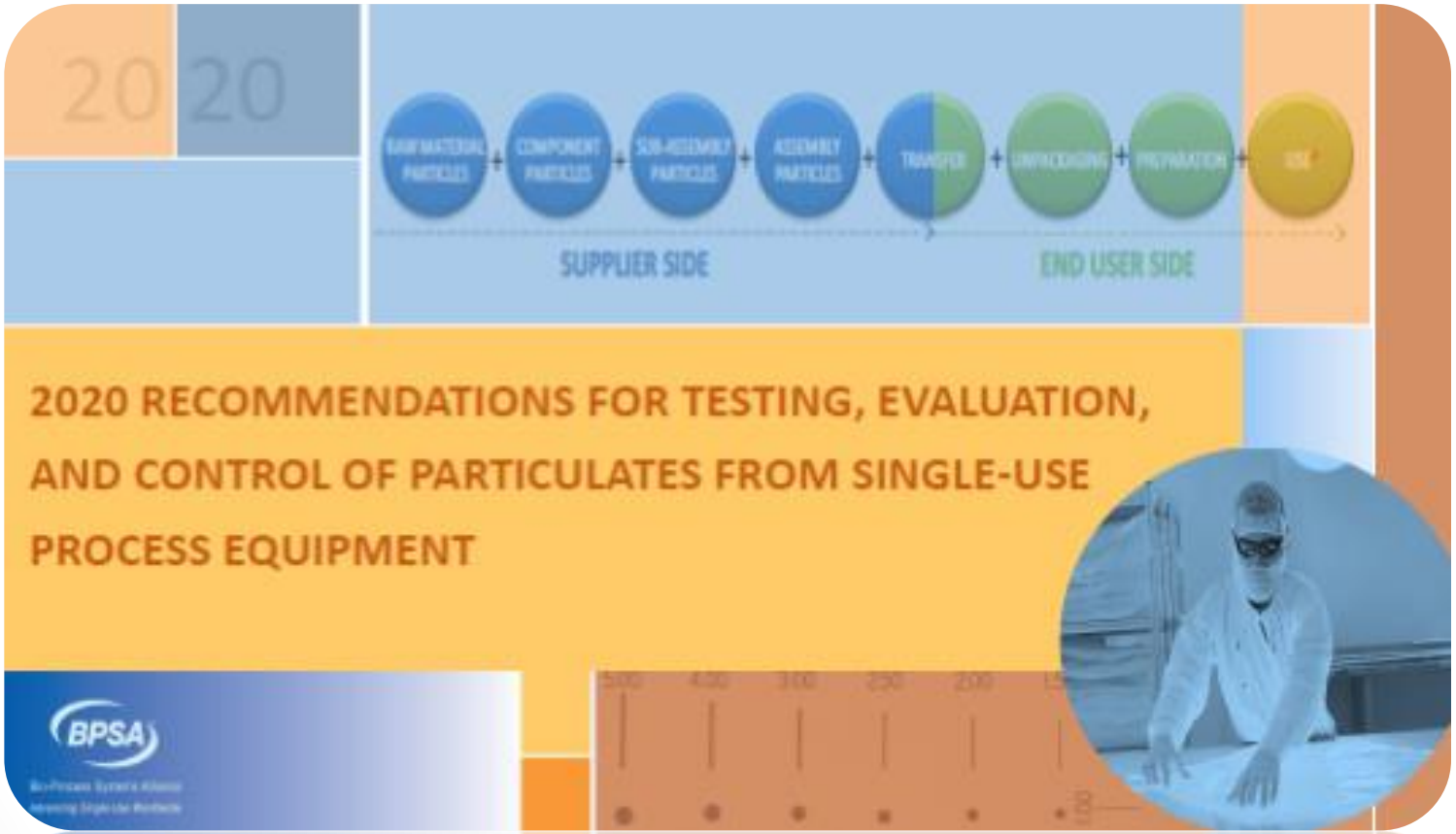
Ref: Guidance for Industry Sterile Drug Products Produced by Aseptic Processing — Current Good Manufacturing Practice

Particulate Requirement

A particle is loose mobile or embedded matter that is unintentionally present in/on the single-use component/assembly and potentially may contact or may end up in the process/product fluid.

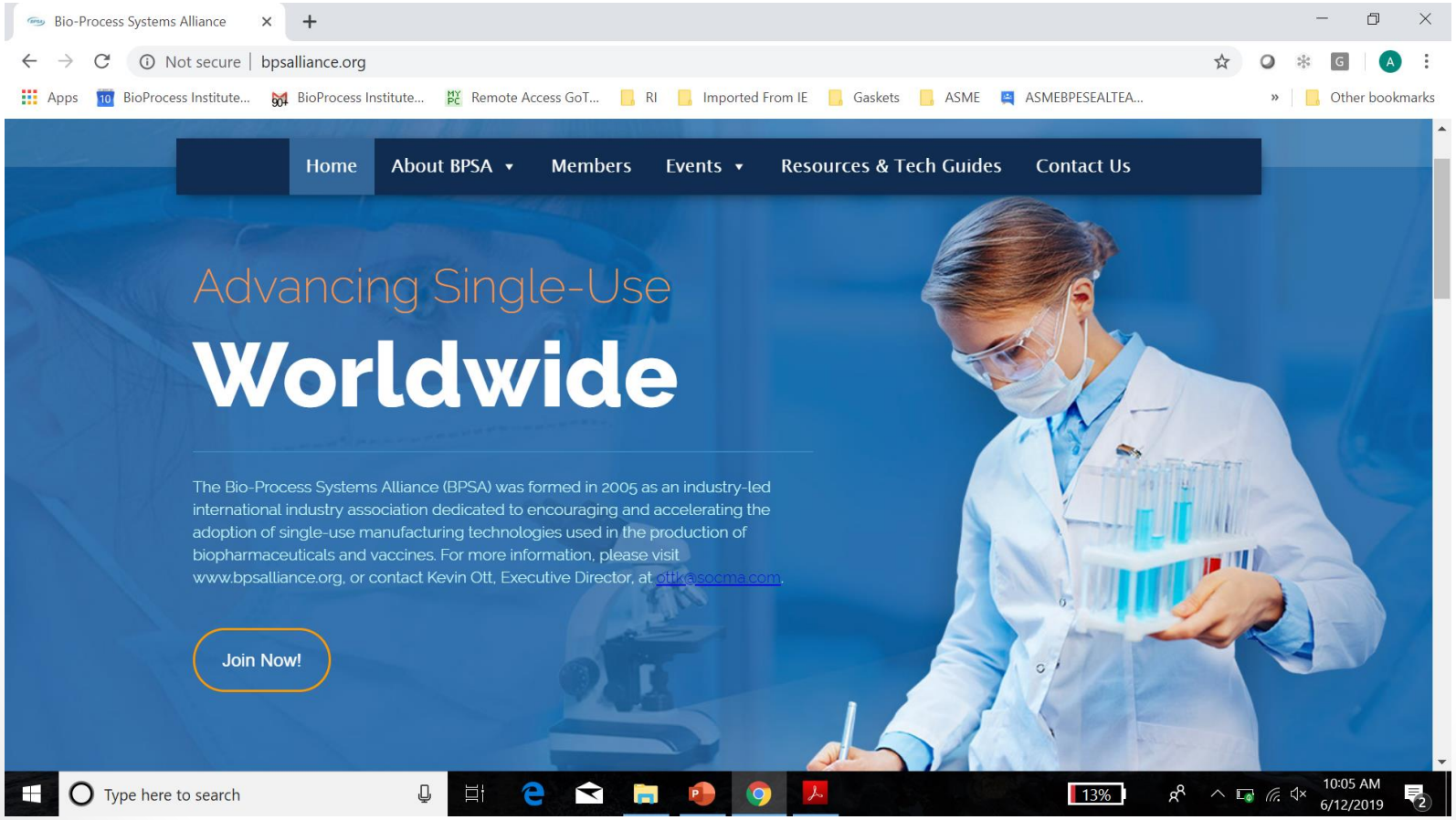
"The goal of end users, regulators, and standards setting organizations should be to minimize particulates in drug products without placing unnecessary expectations on suppliers for minimal safety gains."

BPSA Particulate Paper



BPSA Change Management

http://bpsalliance.org/technical-guides/



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end users

Our goal is to help our clients make better drugs

suppliers

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