

DECONTAMINATION PROTOCOLS

Writing Effective Decontamination Protocols Can Lead To More Efficiency and More Profitable Business

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Learning Objectives

- Adopting a specific, well-orchestrated decision-making process to adapt and respond to each unique cleaning and disinfection job.
- How to develop an accurate, site-specific assessment of a facility to create an accurate scope of work.
- Develop the site-specific protocol for disinfection and decontamination.
- Possess the tools and knowledge to properly implement the site-specific protocol, resulting in proper disinfection and satisfied customers.

Initial Assessment

Developing the Protocol

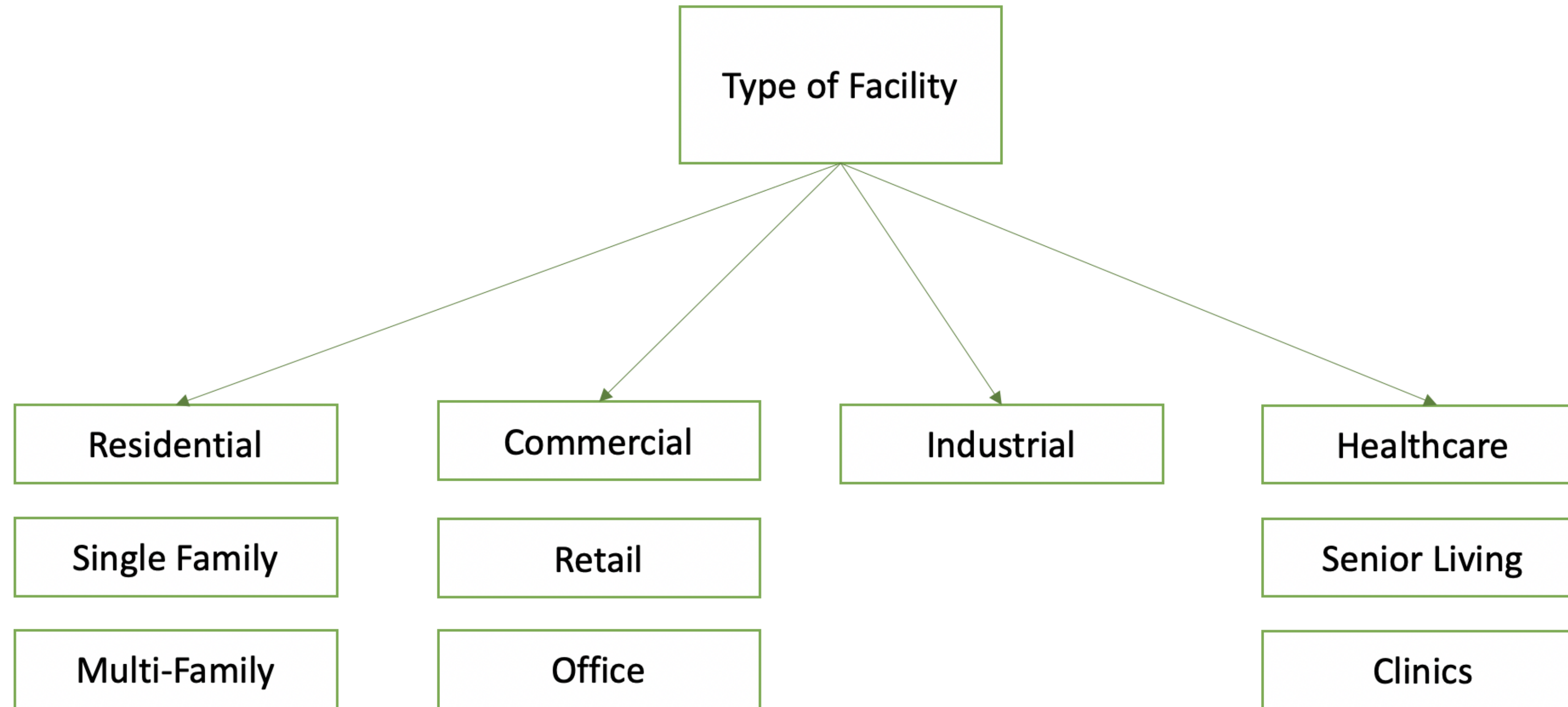
Implementing the Plan



INITIAL ASSESSMENT

What type of facility is it?

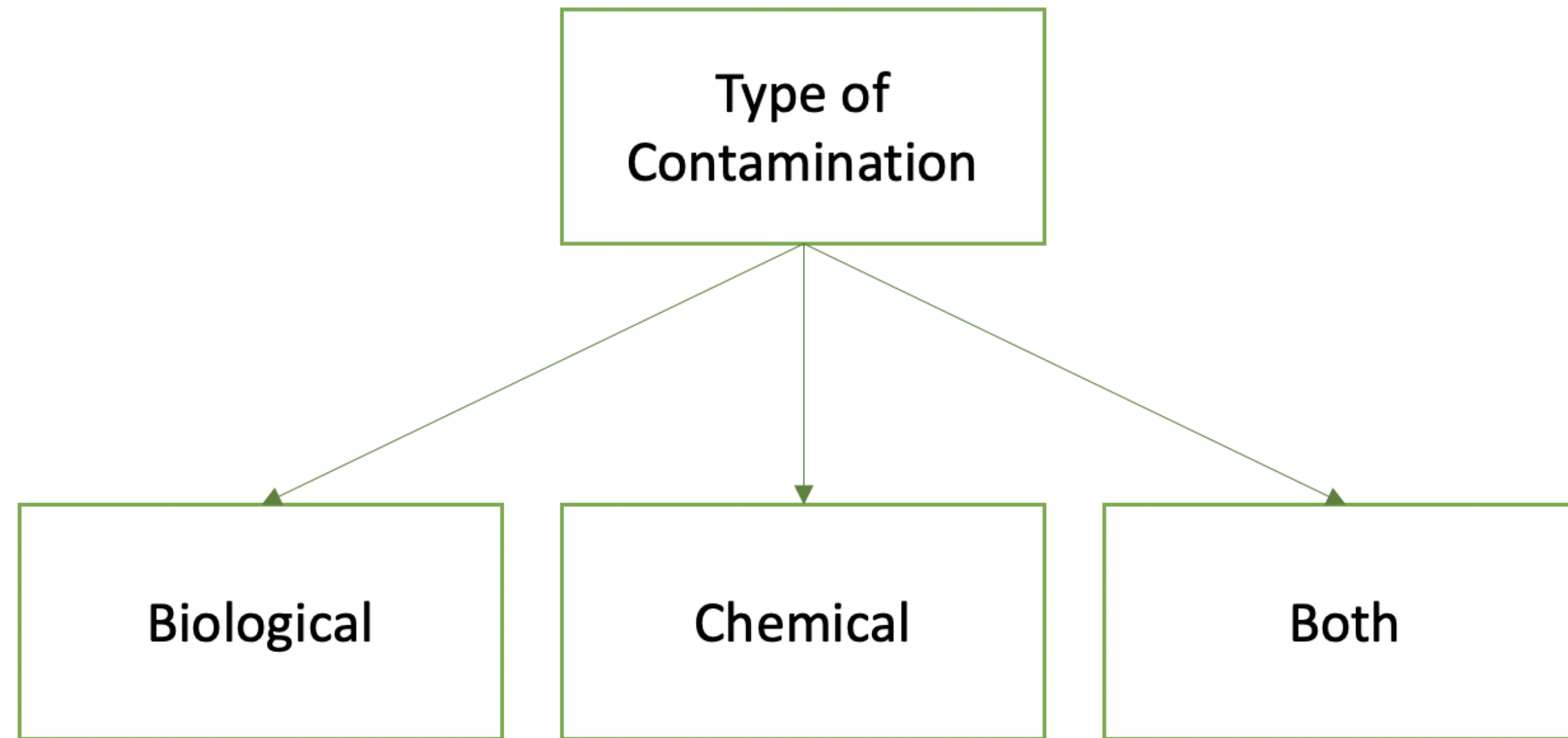
- Residential
- Commercial – Office, Retail, Gym Etc.
- Industrial – Factory, Storage Facility Etc.
- Healthcare – Medical Office, Nursing Home, Walk-In Clinic Etc.
- Education - schools, dorm rooms, auditoriums
- Transportation – Buses, Trains, etc.



INITIAL ASSESSMENT

What is the contaminant?

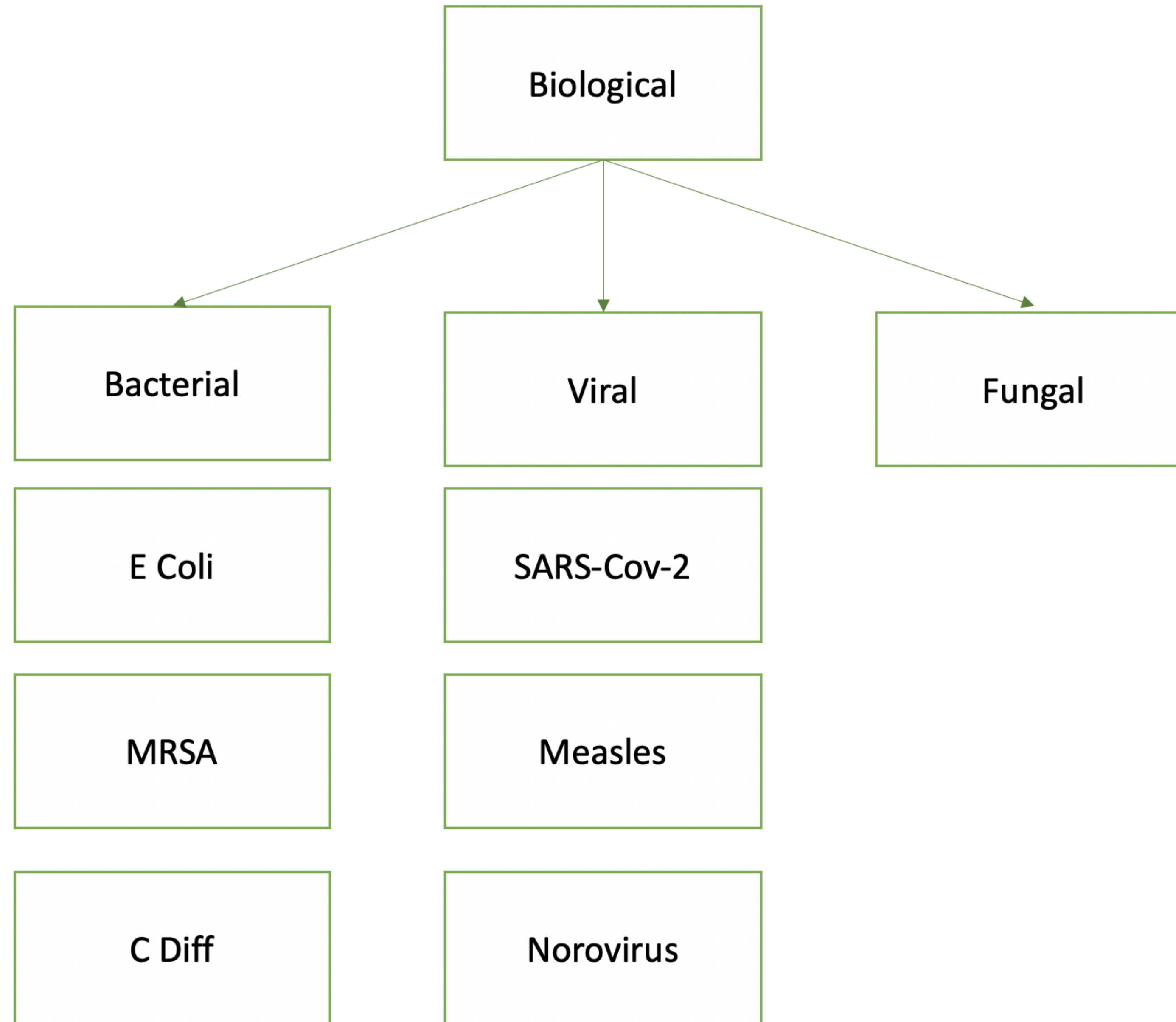
- Biological
- Chemical
- Both



INITIAL ASSESSMENT

Biological

- Bacteria – MRSA, E Coli, Clostridium Difficile (C-Diff.), Tuberculosis (TB)
- Virus – SARS-CoV-2, Measles, Hepatitis
- Fungal (Mold)



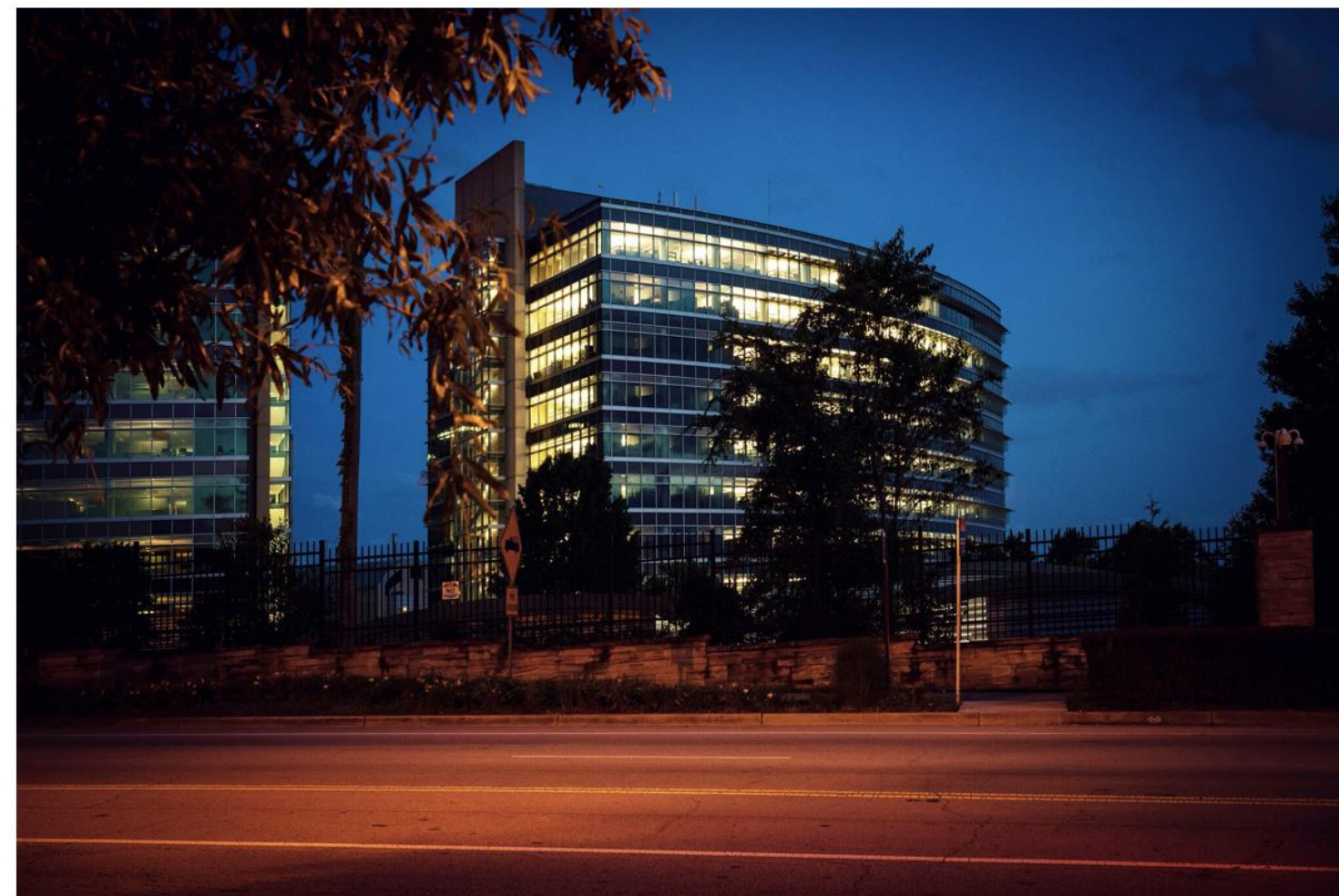
INITIAL ASSESSMENT

Examples of Biological Contamination:

Office Building

C.D.C. Closes Some Offices Over Bacteria Discovery

The move highlights the risk of Legionnaires' disease outbreaks when buildings are reopened after coronavirus lockdowns.



C.D.C. headquarters in Atlanta. The agency had to again close some office space it leases after Legionella bacteria was detected in water supplies. Audra Melton for The New York Times

Schools



INITIAL ASSESSMENT

Biological Examples Cont'd. :

Residential

Mold



Senior Living Facility

Virus

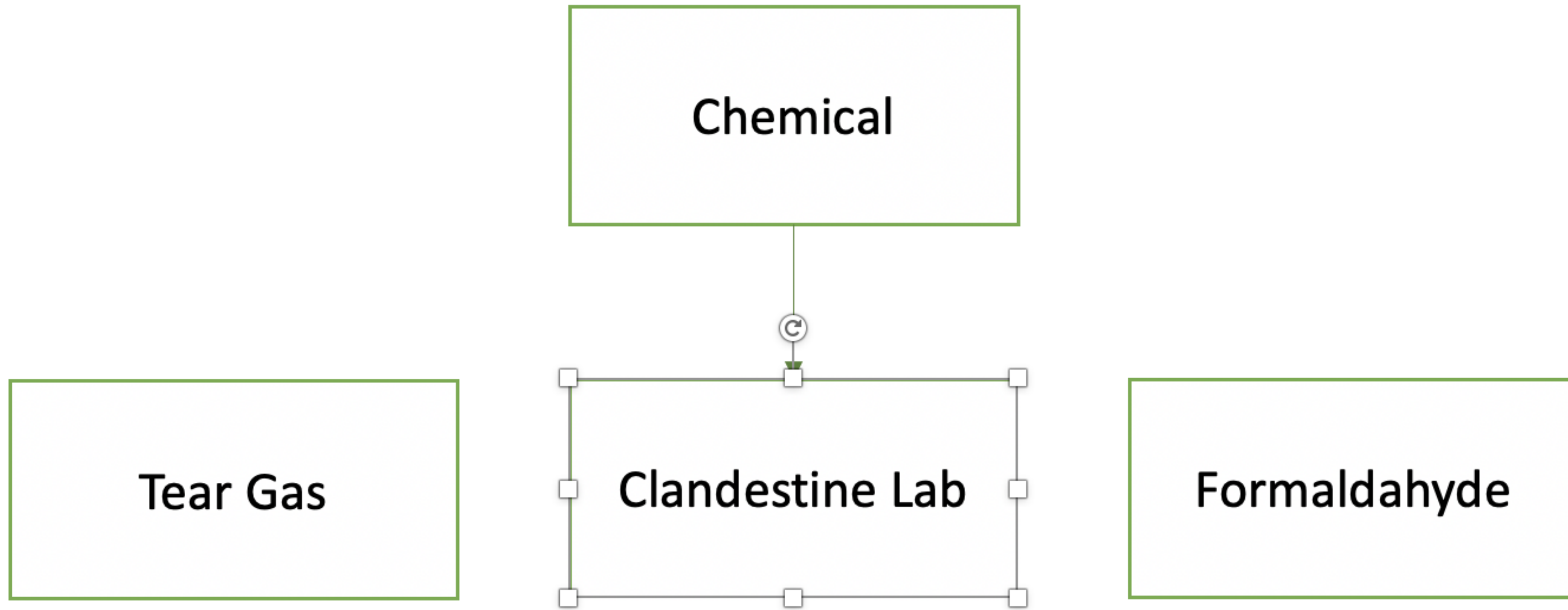


INITIAL ASSESSMENT

What is the contamination cont'd.

Chemical

- Clandestine Drug Lab, (Meth, Fentanyl)
- Tear Gas (Which type was used, could influence cleaning solutions)
- Formaldehyde



INITIAL ASSESSMENT

Examples of Chemical Contamination:

Residential Meth Lab



Tear Gas Retail



Types – CS, CN or Older formulation ?

INITIAL ASSESSMENT

General Conditions:

Site Specific Job Requirements

- What amount of time is there to achieve the desired results?
- Can the entire affected area be vacated all at once?

If not, then there is a requirement to work in zones/phases

- Any concerns for textiles and other contents with reaction to the decon process such as chemical compatibility or a reaction to ozone

INITIAL ASSESSMENT

General Conditions:

Site Specific Job Requirements

- Are there utilities available i.e., electricity, water etc.?
- Are the mechanical systems operational?
- Does the HVAC system require treatment?

INITIAL ASSESSMENT

General Conditions:

Site Specific Job Requirements

- Does the client require a Site-Specific Health and Safety Plan?
- What are the Post Remediation Verification (PRV) Requirements?

PRV OPTIONS:

- Visual Assessment
- Collection of Air and / or surface samples and sent to a lab for analysis
- ATP sampling
- Odor is eliminated (smell test)

INITIAL ASSESSMENT

Partially Occupied

Can only work from
9am to 4pm

Engineering
Controls Required

Determines crew
size required to
meet timeline to
complete project

DECONTAMINATION OPTIONS

Cleaning and application of chemical sanitizing and or disinfectant agents

Ultraviolet Light Equipment

Hydroxyl Machines

Ozone Machines

▲ Sometimes a decision needs to be determined by what is available to you at the time?

DECONTAMINATION OPTIONS

Ultraviolet Light Equipment

Hydroxyl Machines

Ozone Machines

Utilizing equipment like UV, Hydroxyl or Ozone requires special consideration for each type of technology and the pros and cons of each method need to be evaluated against the environment they are to be used in.

DECONTAMINATION OPTIONS

Choosing the right combination of:

- Chemicals - Cleaner, Sanitizer, Disinfectants
- Delivery Systems

DECONTAMINATION OPTIONS

Application of chemical sanitizing and or disinfectant agents.

Factors to consider when determining proper effective sanitizing/chemical agents:

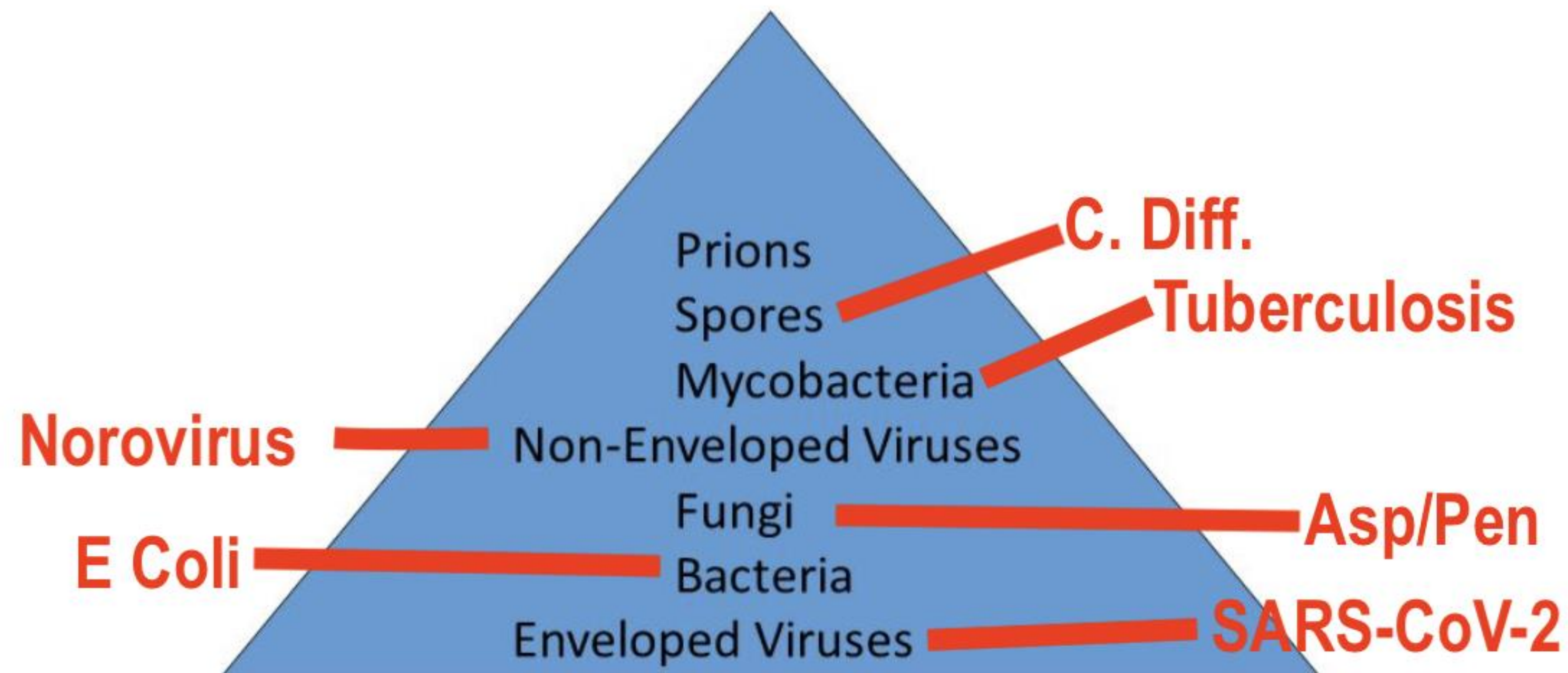
Type of biological contaminant requires a claim on the label.

Examples:

- Bactericidal
- Virucidal
- ▲ • Germicidal
- Sporicidal
- Tuberculocidal

DECONTAMINATION OPTIONS

Decreasing Order of Resistance of
Microorganisms to Disinfectants/ Sterilants



CDC Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008, p 33

DECONTAMINATION OPTIONS

What are the different levels of disinfectants?

The EPA registers three different types of disinfectants: Limited, General and Hospital.

All three disinfectants destroy or irreversibly inactivate certain microorganisms on hard, inanimate surfaces and objects. You can determine a “limited, general” or “hospital disinfectant by the organisms listed on the label.

- Limited must be supported by efficacy testing against **either** *Salmonella choleraesuis* **or** *Staphylococcus aureus*. Limited disinfectants are found mostly in household use products.
- General must be supported by efficacy testing against **both** *Salmonella choleraesuis* **and** *Staphylococcus aureus*. General disinfectants are used in commercial areas.
- Hospital must be supported by AOAC Use Dilution or AOAC Germicidal Spray efficacy testing against *Staphylococcus aureus*, *Salmonella choleraesuis* and *Pseudomonas aeruginosa*. *Pseudomonas aeruginosa* hides behind biofilm and is difficult to eliminate. Killing this bacterium is required for “Hospital Disinfectant”.

DECONTAMINATION OPTIONS

Other Chemical Considerations:

Chose a chemical that will meet the requirements for:

- Time constraints – What is the products dwell time
- What are the delivery methods as stated on the products label?
- Can it be fogged, sprayed with an electrostatic device or ULV fogger etc.?
- Chose a chemical that meets the requirements to eliminate the contaminant (log reduction)?
- Will the chemical cause any reaction to the existing textiles and soft goods or surfaces i.e., wood finishes, oil paintings, soft stone etc.
- Is there space used for any food prep?

DECONTAMINATION OPTIONS

Applying Chemical Solutions:

Delivery Systems Considerations:

- What is the size of the space vs the time constraints to complete the job (anticipated production rates)

What other factors can affect performance of the delivery system:

- Objects with many hard-to-reach places may require an electrostatic spraying apparatus - gym equipment, classrooms, wheelchairs etc.
- Many electrostatic spraying devices may not perform efficiently in large high-volume spaces.

DECONTAMINATION OPTIONS

Once the initial assessment as been completed and we have determined the decontamination methodology then we need to consider other factors in the equation:

Are there going to be occupants near the work area? Are engineering controls required? (work completed in phases)

If so, how, where and when (staging the workflow)

Is source removal required?

- Demolition
- Heavy Cleaning
- Detailed Cleaning

DECONTAMINATION OPTIONS

Site Prep Considerations Cont'd.:

Engineering Controls

- Negative Air Chambers (cap plumbing drains)

If fogging:

- Cover Smoke Detectors/Sensors
- Place fire alarm system in test or standby mode
- Is fire watch required?

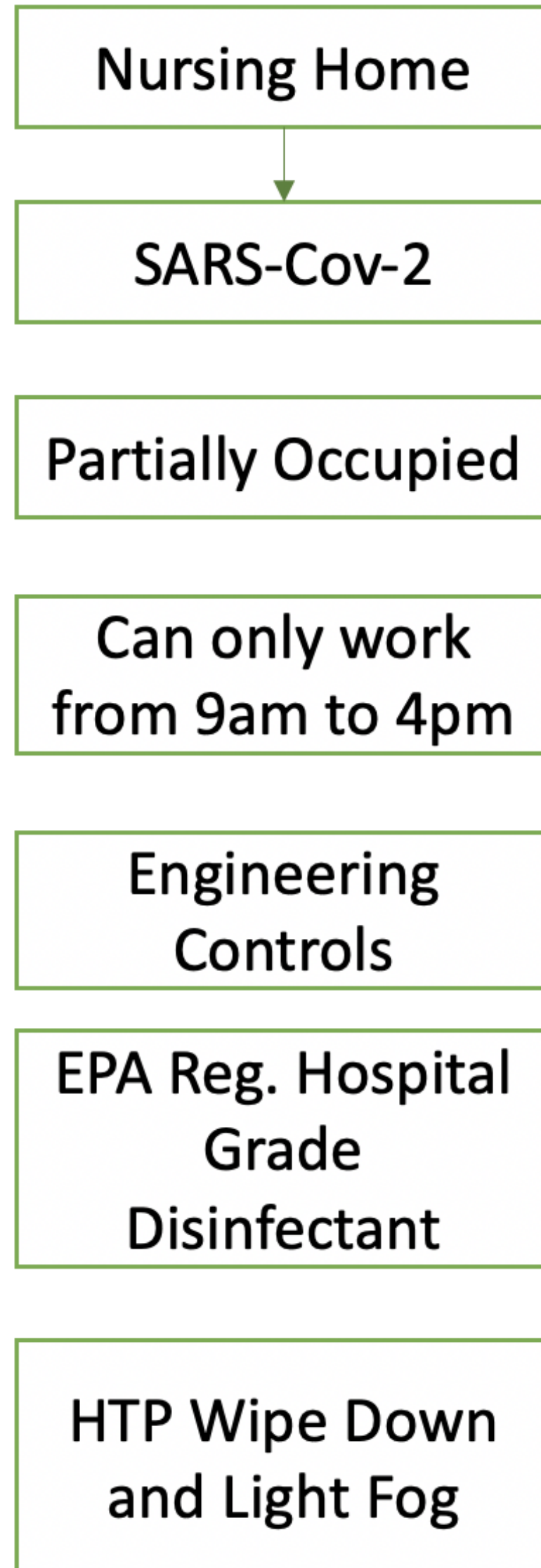
DECONTAMINATION OPTIONS

Personal Protective Equipment (PPE) Requirements

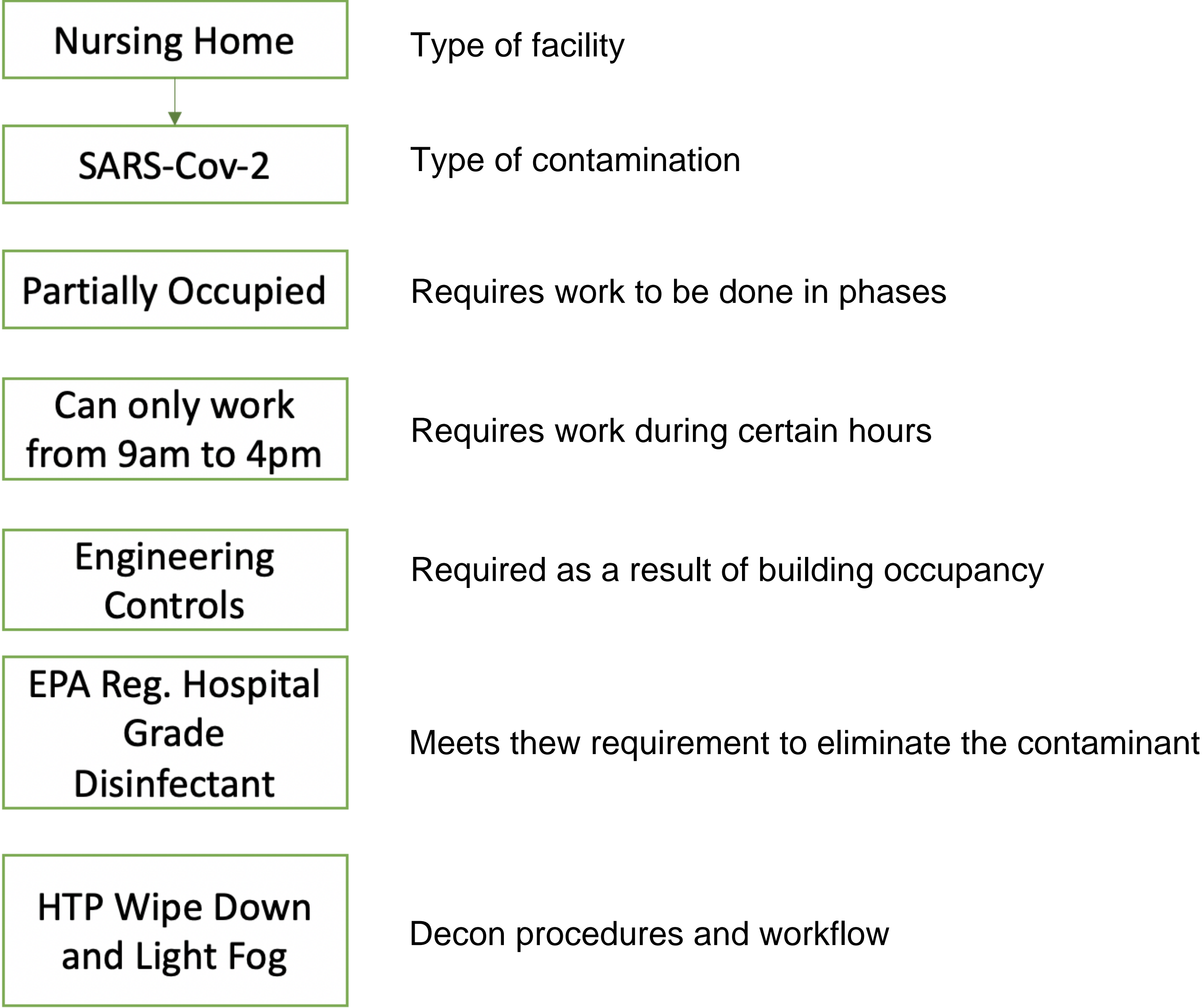
1. Risk Assessment Factors

- Cleaning and disinfectants agents being utilized – Follow SDS instructions (these are typically minimal)
- What is the work zone contaminate. Quite often the contamination in the work zone will dictate the proper level of PPE more so than the SDS label.
- How the chemical is being applied may determine the level of PPE required, trigger, sprayer, ULV fogger, Electrostatic etc.

Decision Tree Example



Decision Tree Example



WRITING THE PROTOCOL

Plan and Procedures

Establish Work Zones

- Operating Zones
- Transition Zone
- Clear Zone

WRITING THE PROTOCOL

Plan and Procedures Cont'd

1. Layout the work plan/flow - This step is important to ensure all affected areas are treated and nothing is missed. It also ensures no areas are mistakenly treated twice.

- Back to front
- Top down
- Stage supplies as required
- Entry and Exit Strategy

2. Specify PPE requirements for each work area.

▲ 3. Address life safety system requirements:

- Cover smoke sensors?
- Place fire alarm system in standby mode?

4. Specify chemical and deliver systems in applicable

WRITING THE PROTOCOL

Plan and Procedures Cont'd

Should air movement be limited to increase ppm concentration of the chemical agent

Is coordination with facility maintenance personnel required to control HVAC systems during the decon process?

Team Coordination – Designate work areas for each team member

WRITING THE PROTOCOL

Plan and Procedures Cont'd

Are AFD's required? If so, how many and for how long?

What are the requirements for PRV? Turn off AFDs, leave them running etc.

Address waste disposal/management.