Isoflurane Safety

Karrie Lahue
UVM Biosafety Coordinator
IACUC Educational Session
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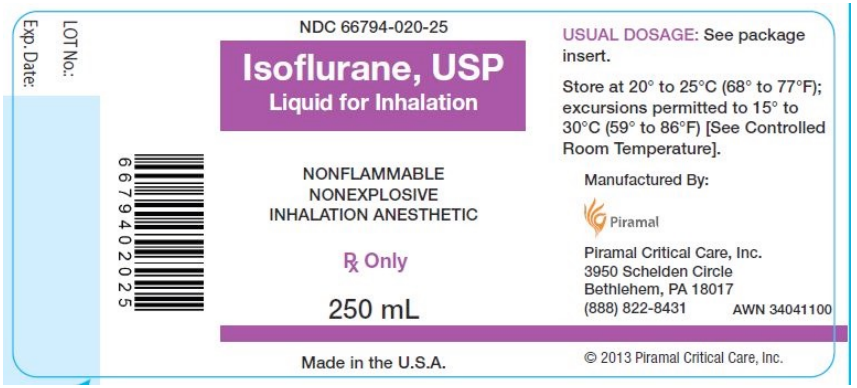
Objectives

1. Isoflurane is a hazardous chemical
2. Health affects of isoflurane
3. UVM's exposure monitoring program
4. Performing a risk assessment for isoflurane
5. Who to contact with questions

Isoflurane is a hazardous chemical!

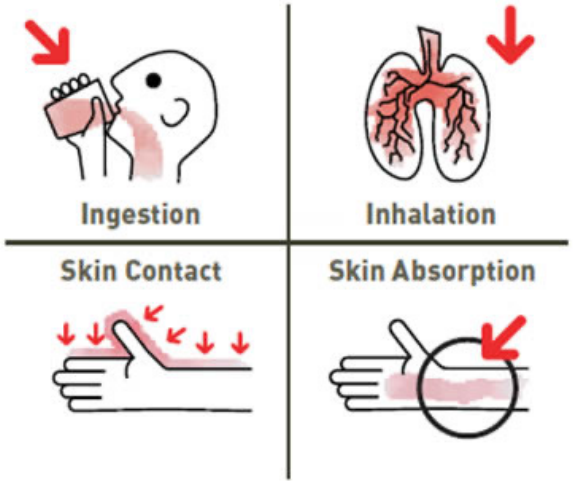
1. Commonly used as anesthetics for animal surgeries or procedures
2. Waste gas can become an exposure issue
3. Proper engineering controls and work practices must be implemented to protect researchers from exposure



Health Effects of Isoflurane

Target Organs

- Central nervous system, heart, liver
- Potential reproductive effects



Routes of Exposure

- Primary: Inhalation
- Skin and eyes

Acute symptoms

- Cough, sore throat; headache, drowsiness, dizziness, asphyxia, and unconsciousness
- Inhalation of high concentrations may cause hypotension, coma, respiratory difficulties, apnea, or seizures

Ether like odor

- **If you can smell it, you're being exposed!**

Exposure Limits for Isoflurane

1. OSHA/VOSHA does not have a permissible exposure limit (PEL) established for isoflurane.
2. Cal-OSHA established a PEL of 2ppm of isoflurane over an 8-hour day.
3. ACGIH recently established a threshold limit value (TLV) of 50ppm of isoflurane over an 8-hour day.
4. EU nations: varies from 2-50ppm

We would like this to be the lowest feasible concentration.

- Reproductive effect
- We can do this!

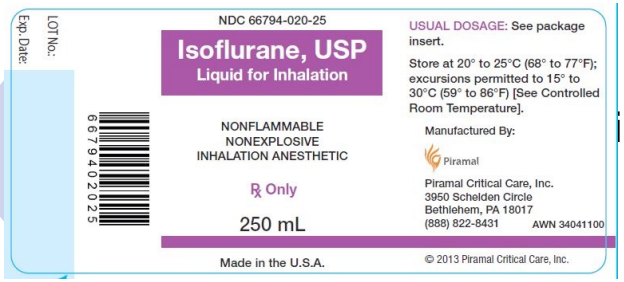
Exposure Monitoring Program

Exposure monitoring using sampling badges

- Email safety@uvm.edu

https://www.uvm.edu/riskmanagement/anesthetic-gas-use

Risk Assessment: Identify and Evaluate the Hazards



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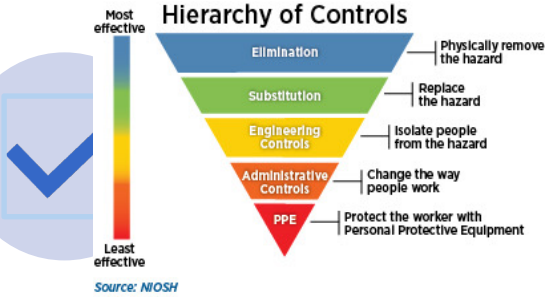
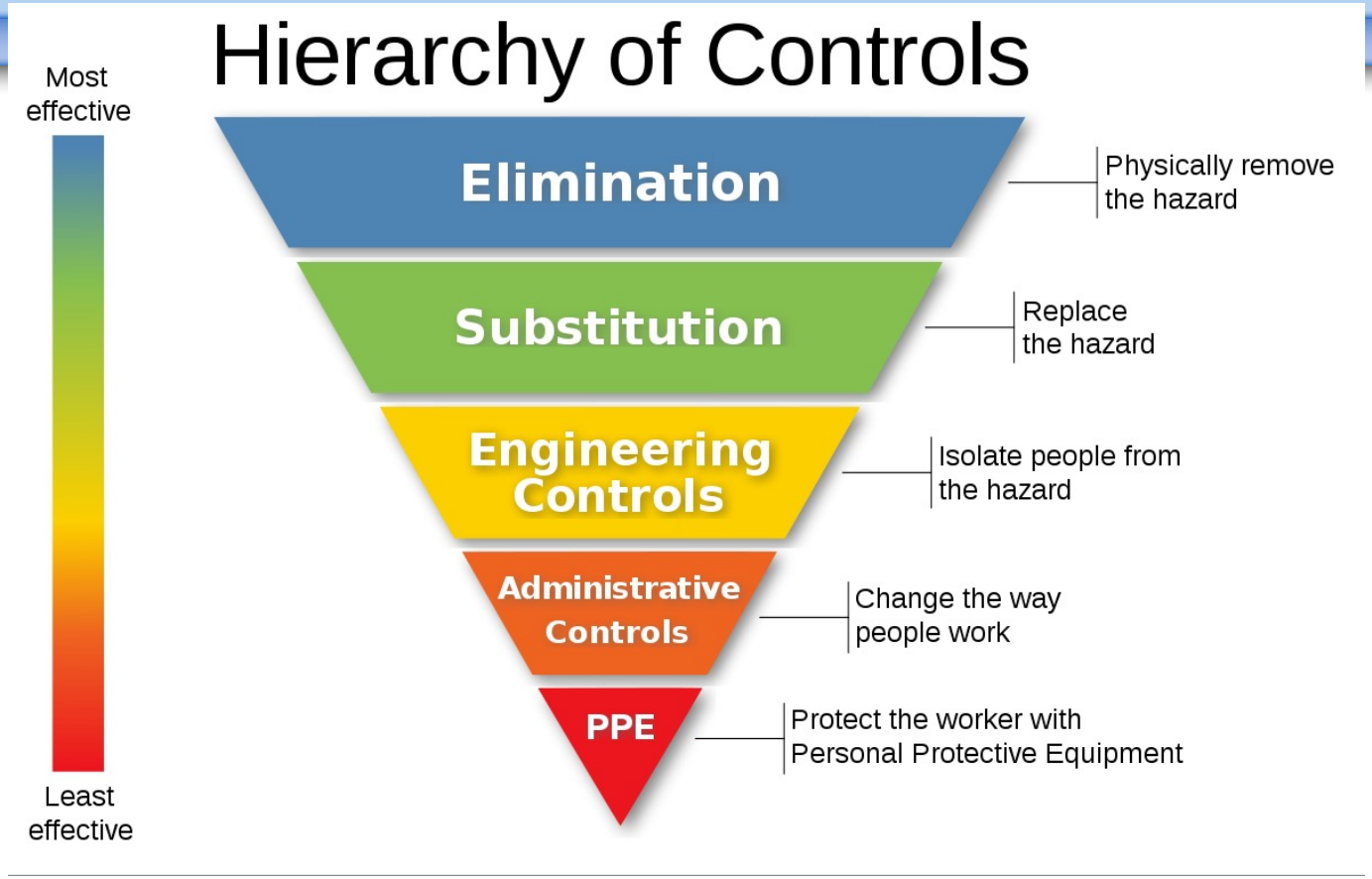
Procedures: DNA sampling, instillation, surgery
Hazards: vaporizer filling, induction chamber use, nose cone area

Evaluate procedures and potential hazards



Review protocol to include controls, Implement new safe protocol



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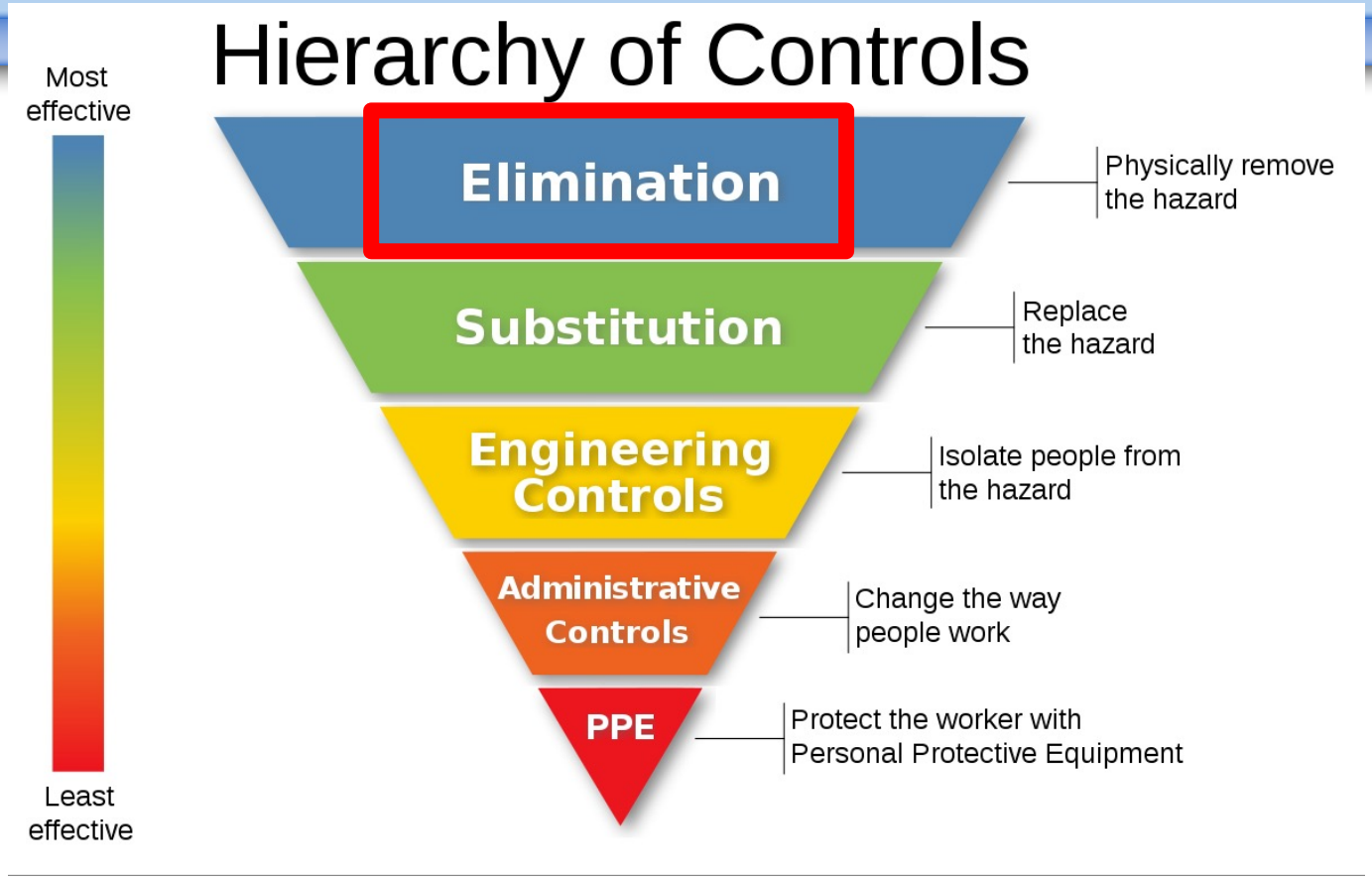

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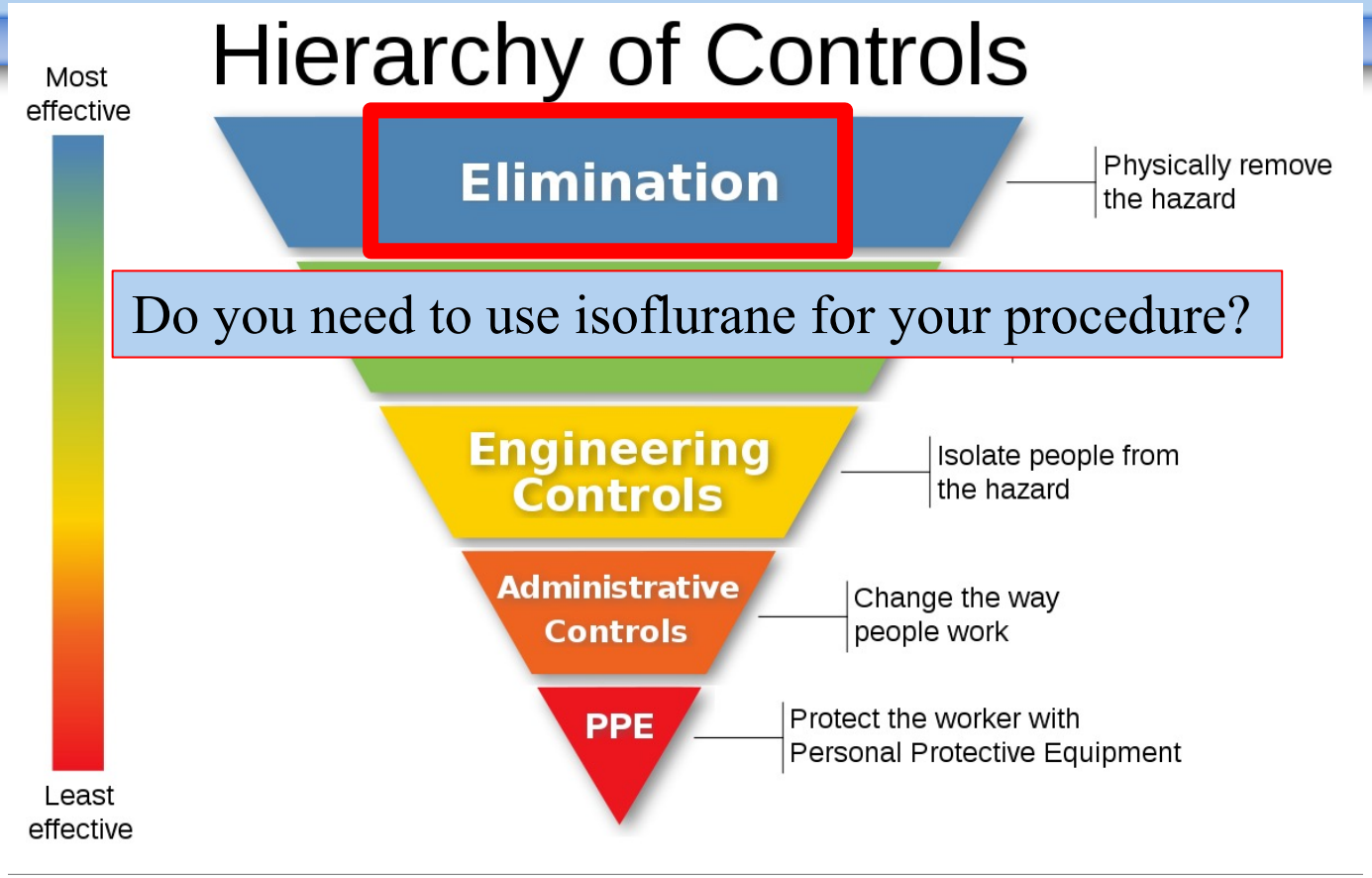

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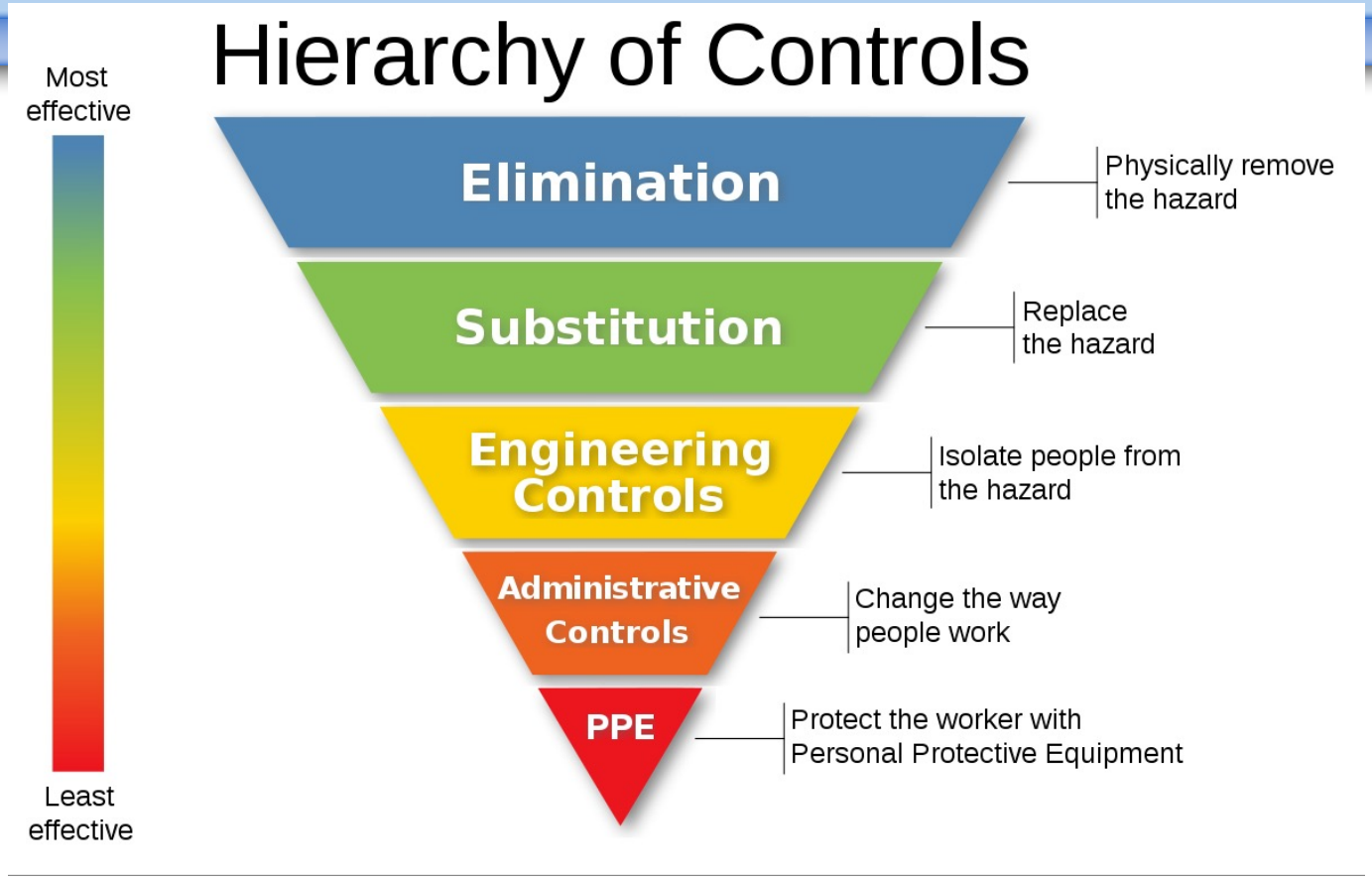

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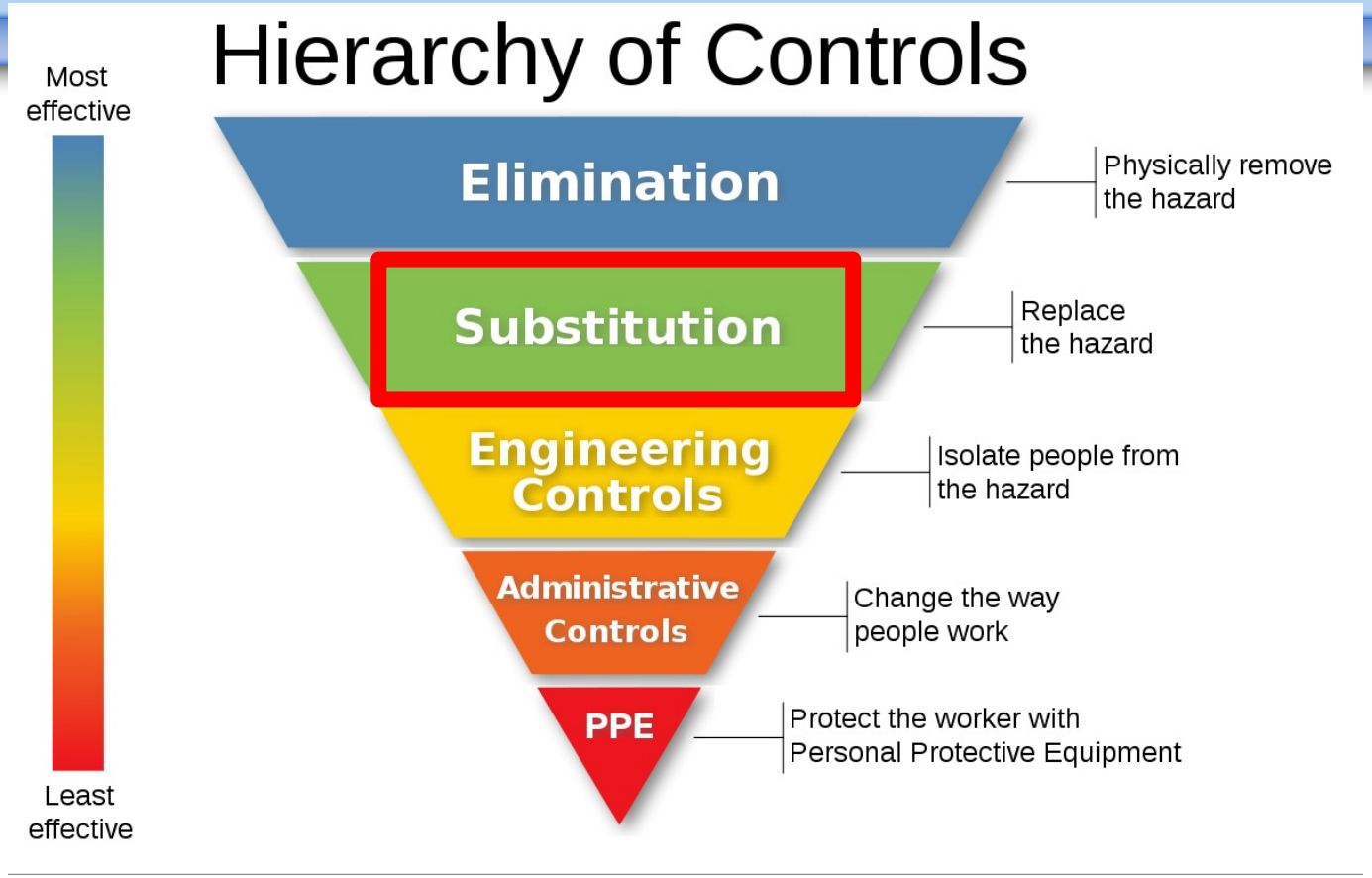

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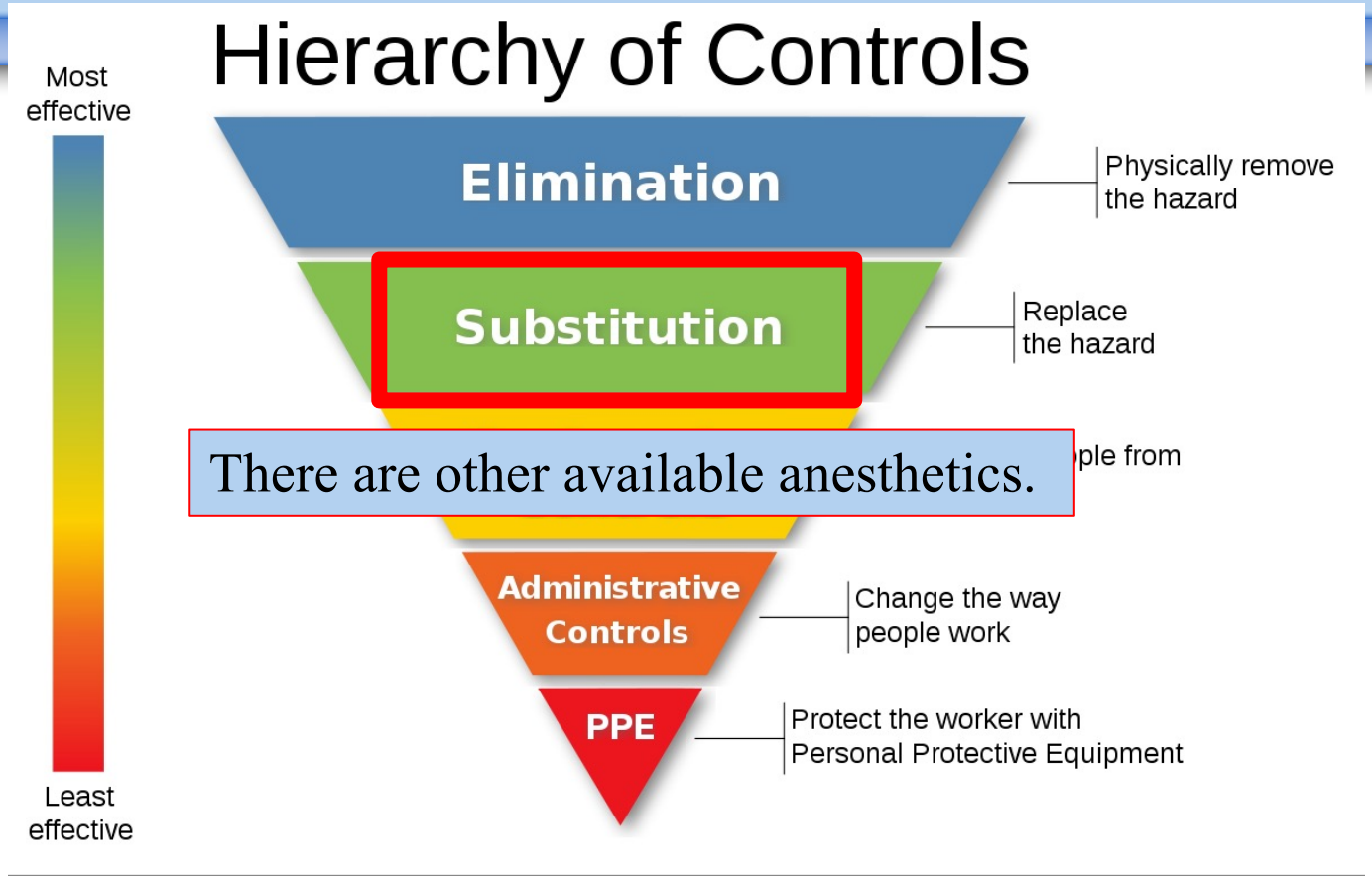

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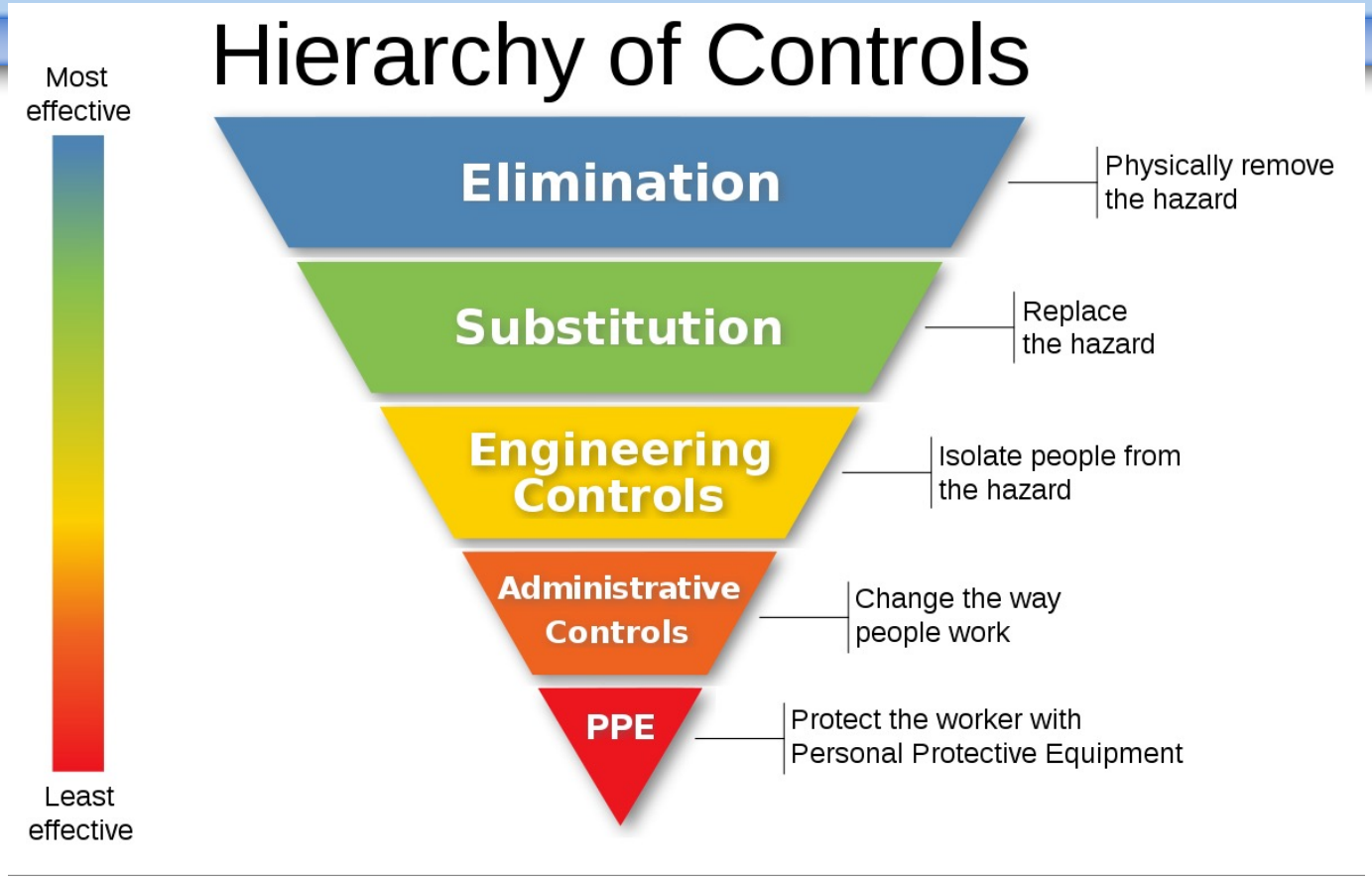

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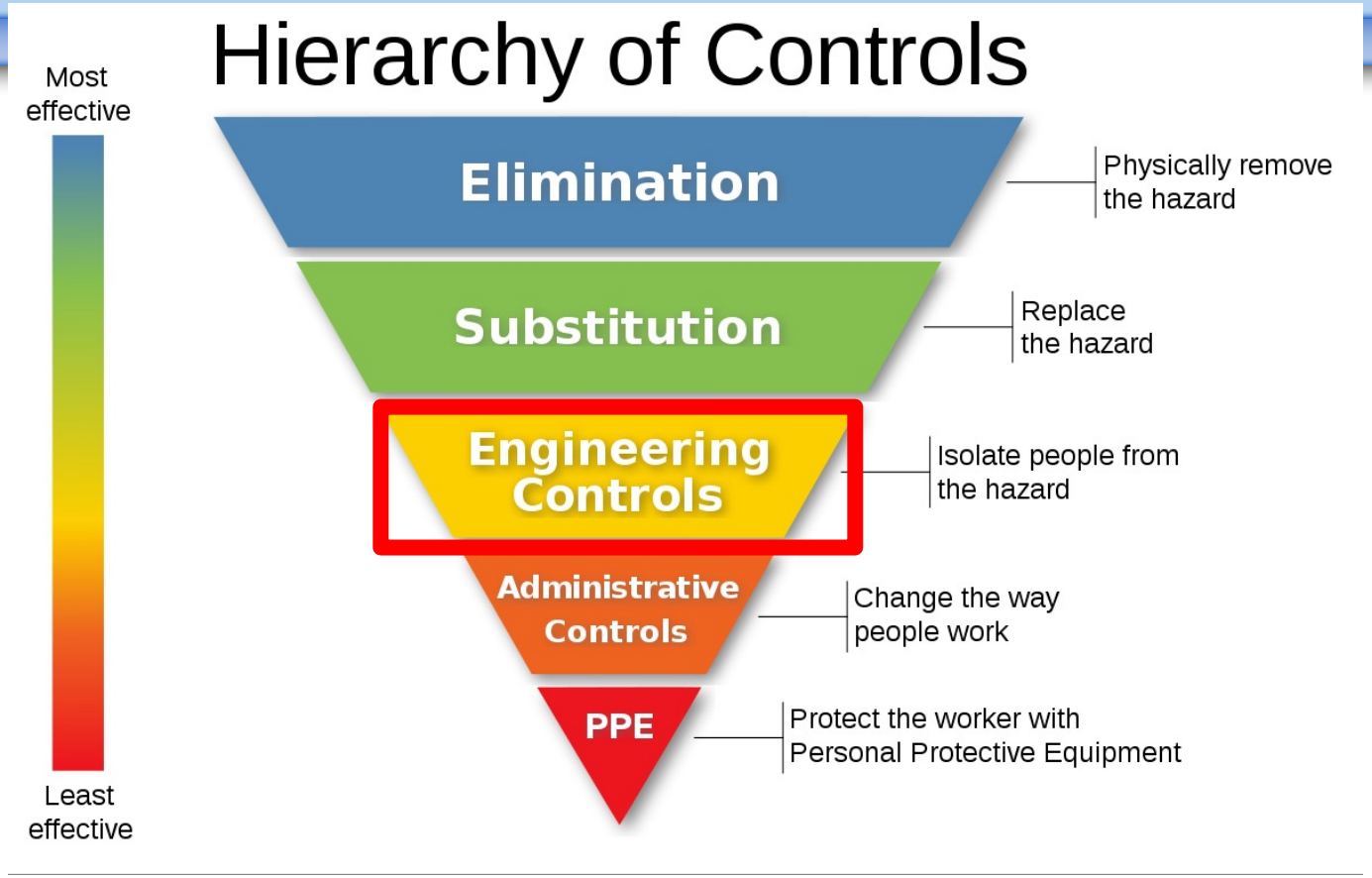

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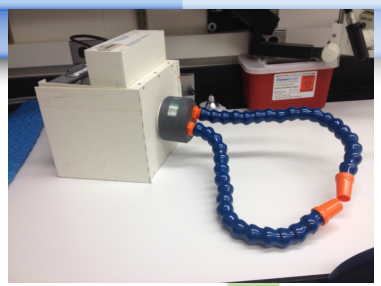

Substitution

Replace the hazard

Engineering Controls

Isolate people fro the hazard

fume hood, snorkel, downdraft table, nose cone choice, active scavenging, isoflurane key-fill system, SomnoFlo

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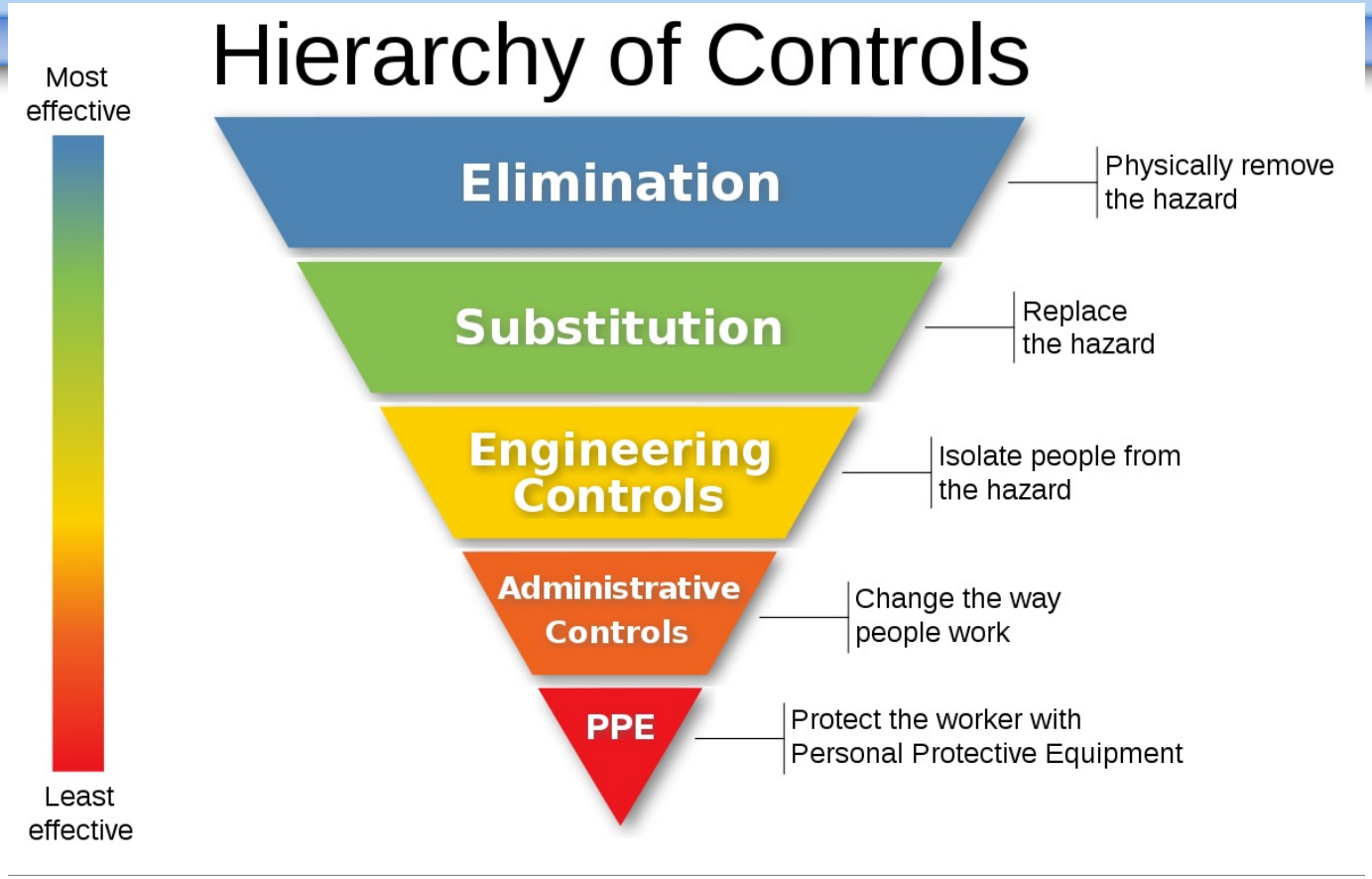

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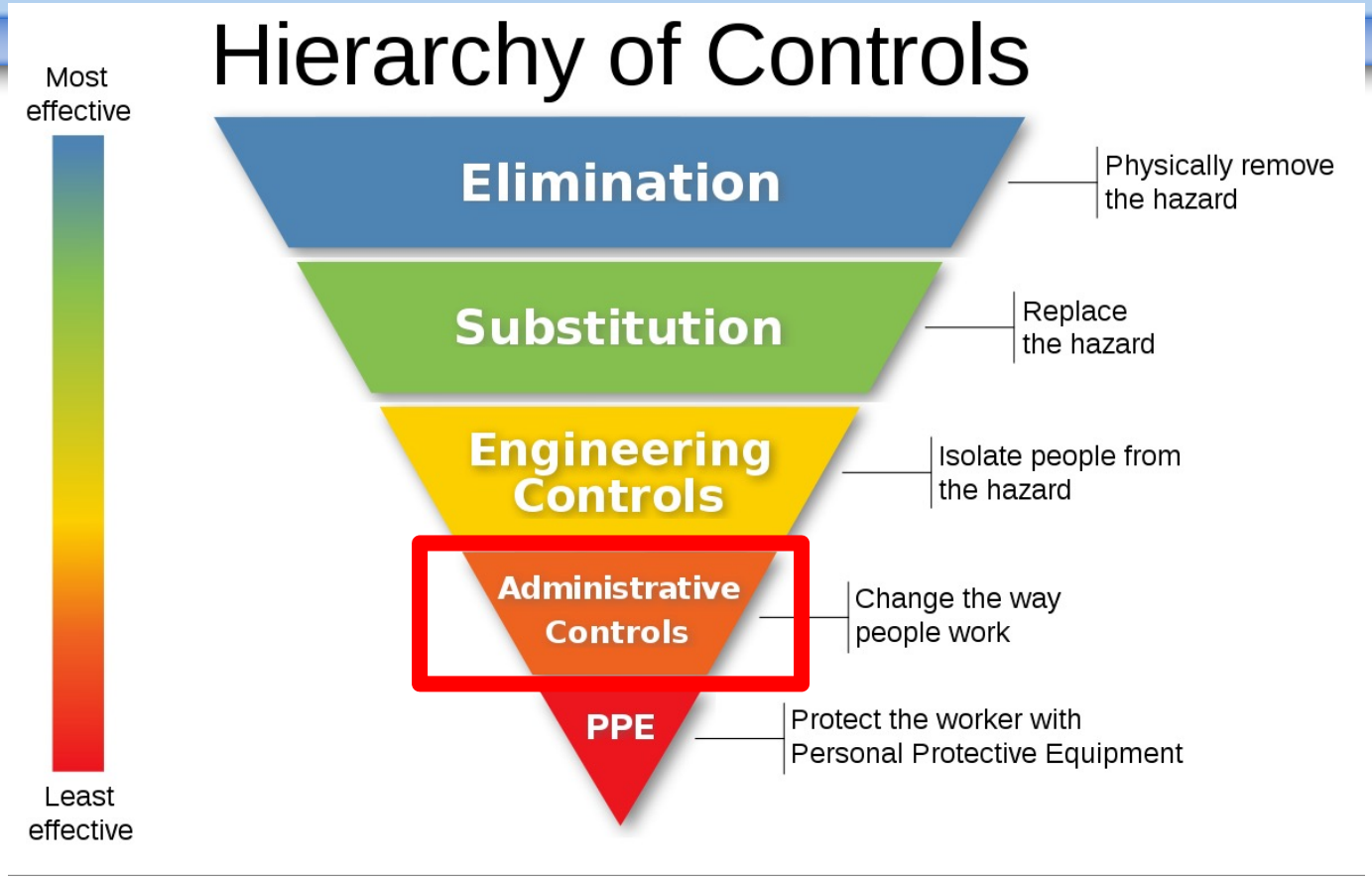

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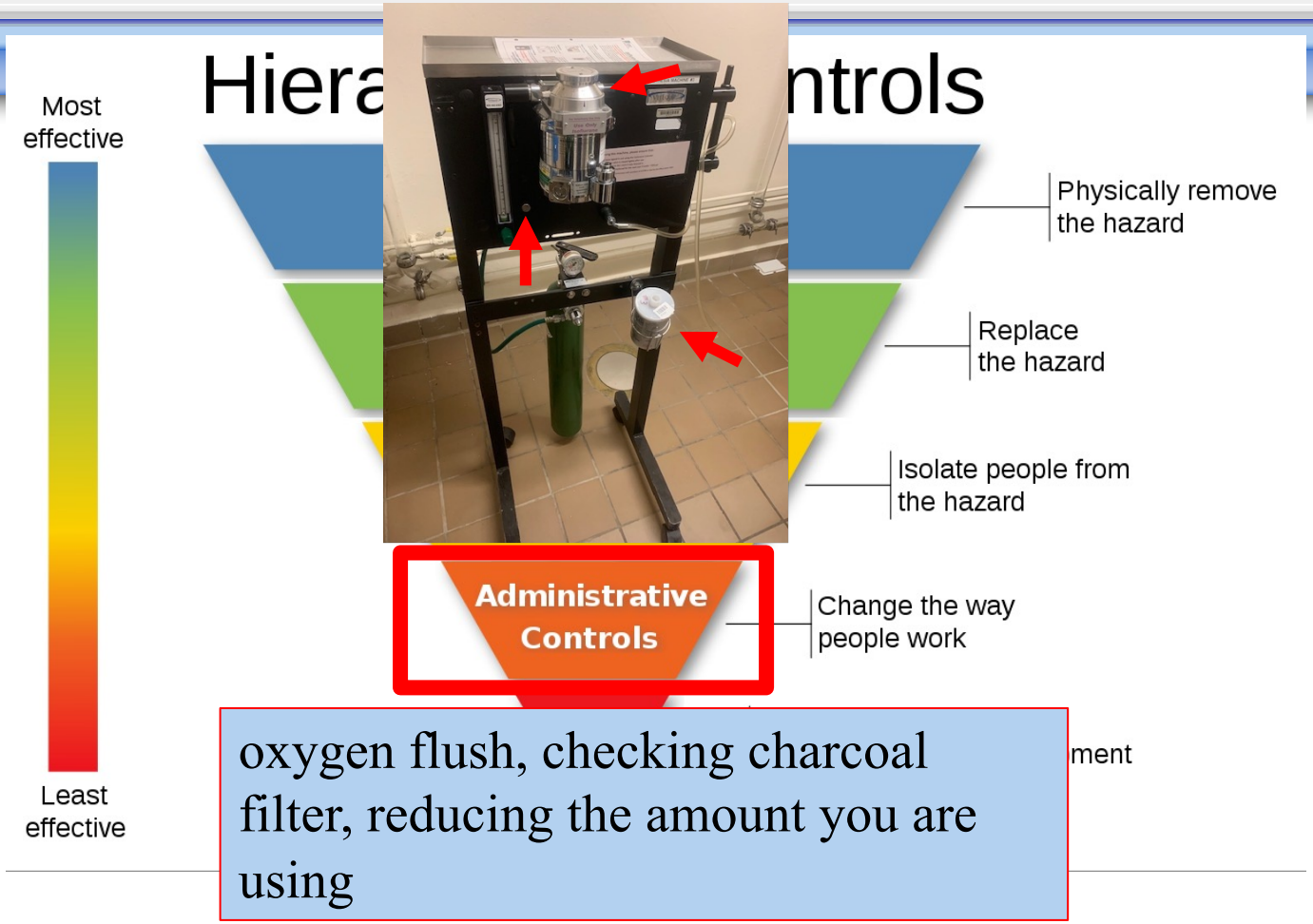

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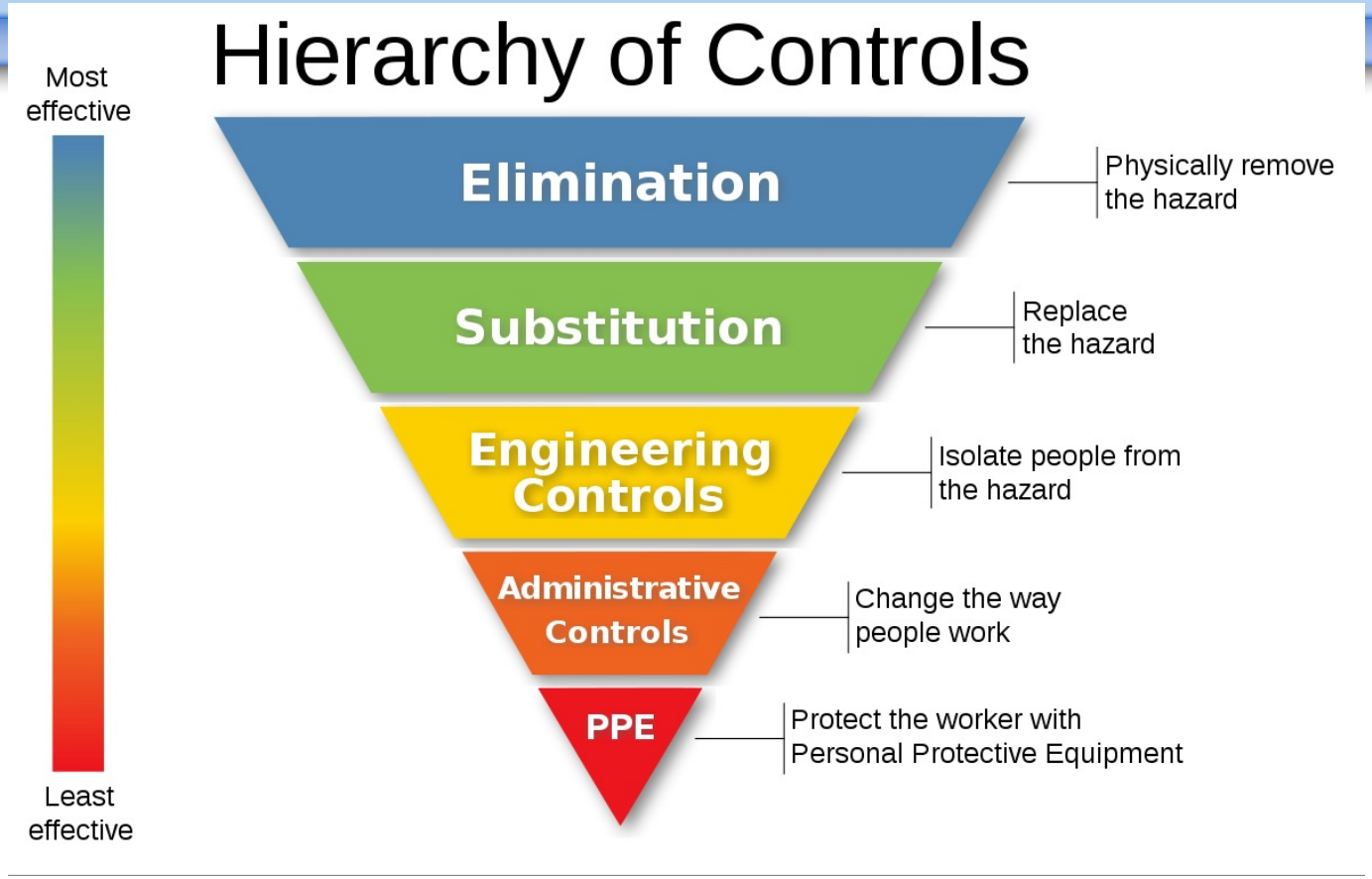

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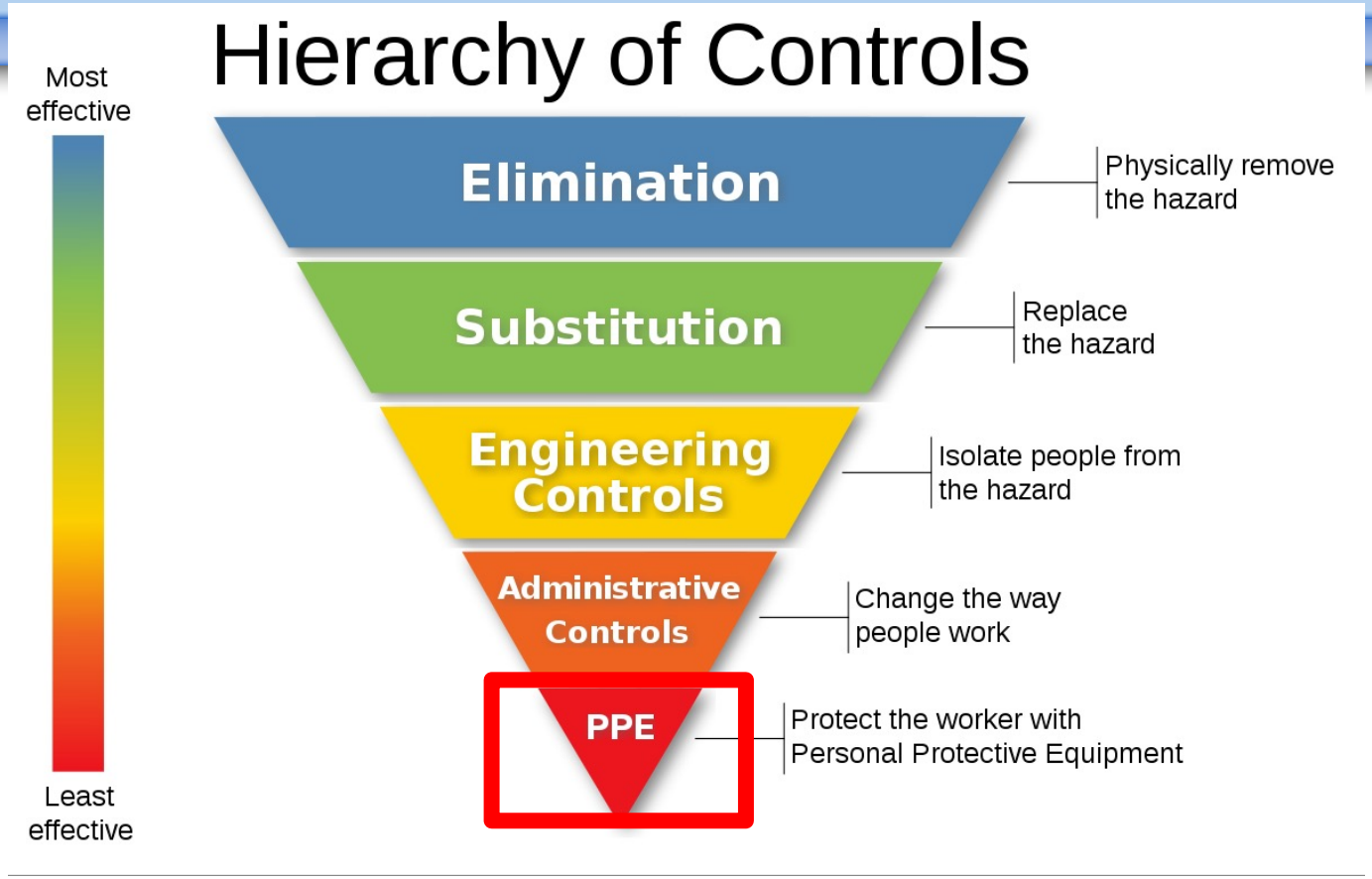

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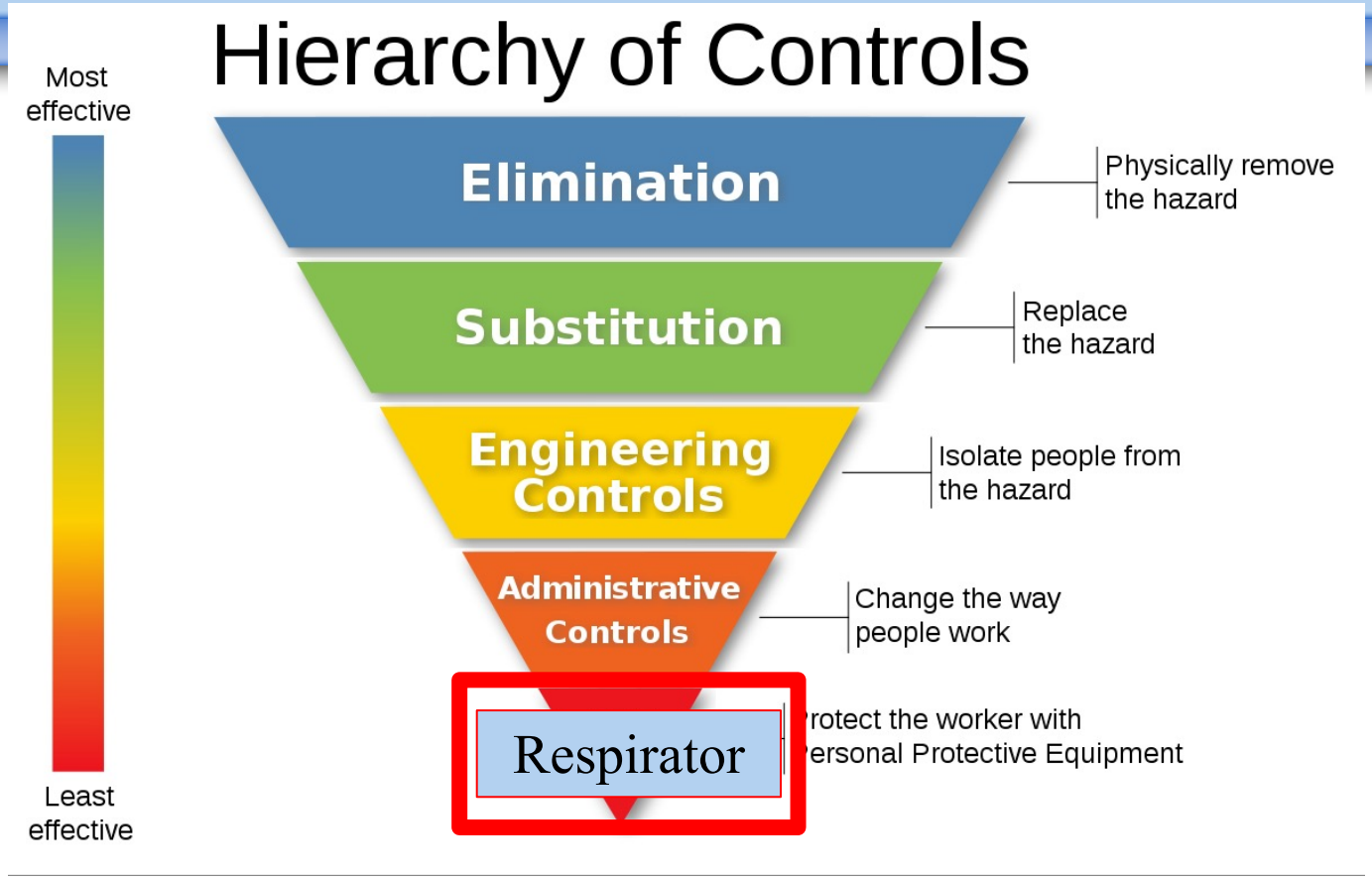

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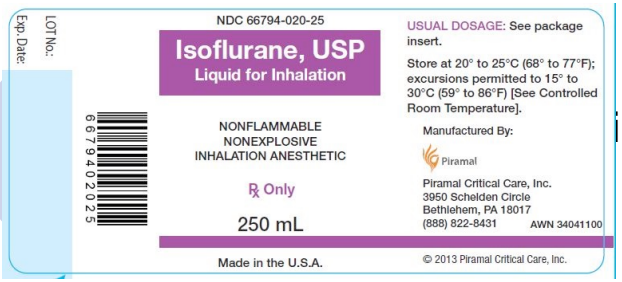
Risk Assessment: Identify and Evaluate the Hazards



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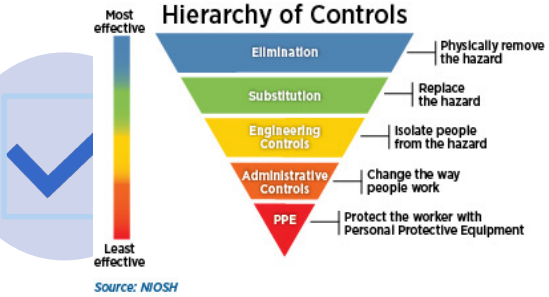
potential hazards



Re-evaluate when there are changes

Document the review

protocol

Please take these messages back to your labs!

Isoflurane is a hazardous chemical!

If you can smell isoflurane, you are being exposed!

Contact us at safety@uvm.edu

Everyone should participate in their own safety!

Thank you!