

Toxic Exposures

Module 10

Learning Objectives

- Understand the increased vulnerability of children with toxic exposures
- Describe the priorities of disaster scene staging when a hazardous materials incident has occurred
- Describe the clinical presentation and management of common toxic exposures encountered in disaster scenarios

Lecture outline

- Big important concepts
- Common toxic exposures after
 - Natural disasters
 - Man-made disasters

Pediatric Vulnerabilities



“all hazards”
approach



CLASS 1:
Explosives



CLASS 5:
Oxidizers
and
Organic
Peroxides



CLASS 2:
Gases



CLASS 6:
Poisonous
and
Etiologic
Materials



CLASS 3:
Flammable
Liquids



CLASS 7:
Radioactive
Materials



CLASS 4:
Flammable Solids,
Spontaneously
Combustible
Materials, and
Materials
That Are
Dangerous
When Wet



CLASS 8:
Corrosives



CLASS 9:
Miscellaneous
Hazardous
Materials



hazardous
materials
a.k.a.
hazmat



A



B

C

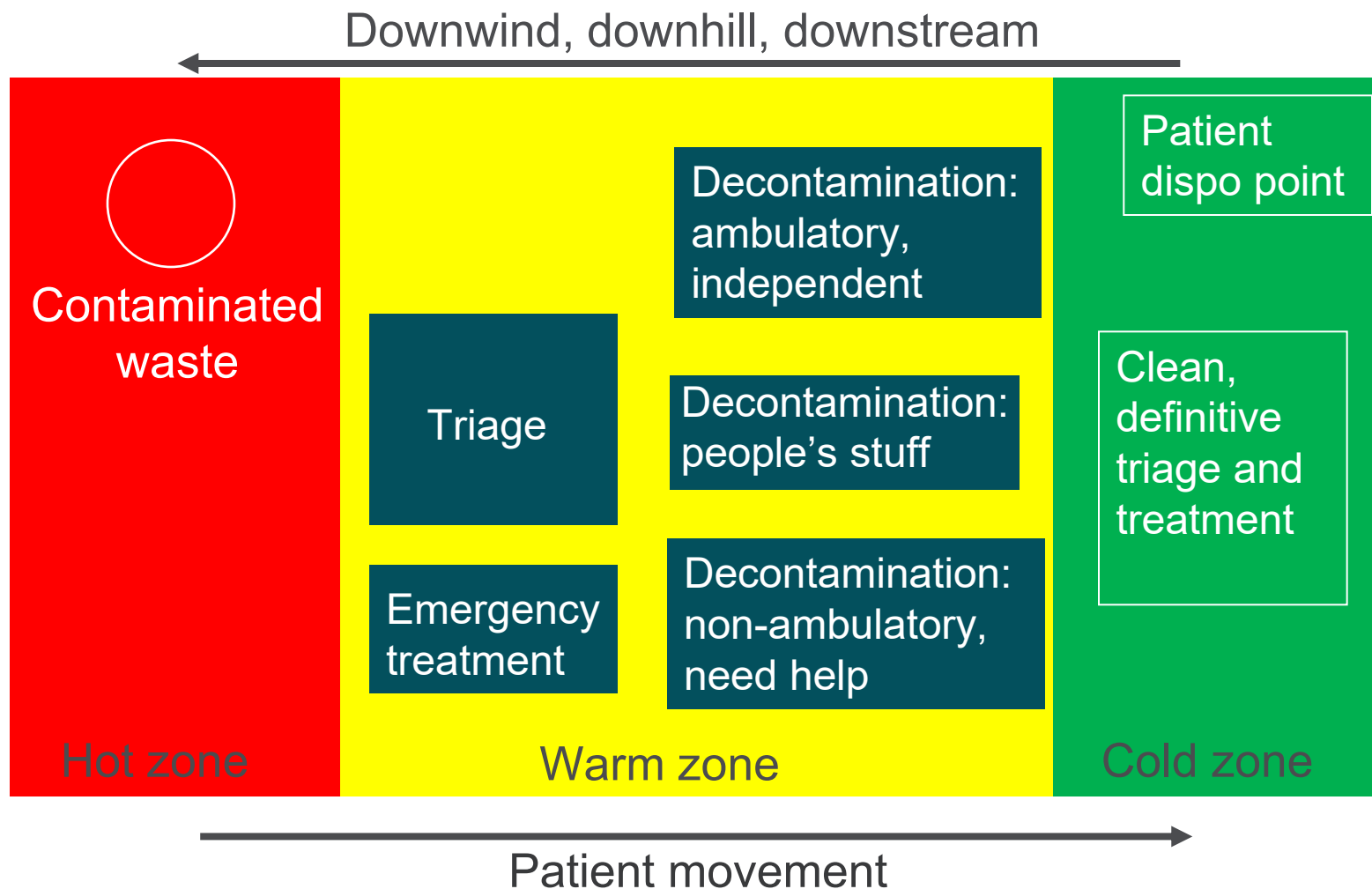


D

the ABCs of PPE

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decontamination



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treat the patient
not the poison

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Toxic Waste

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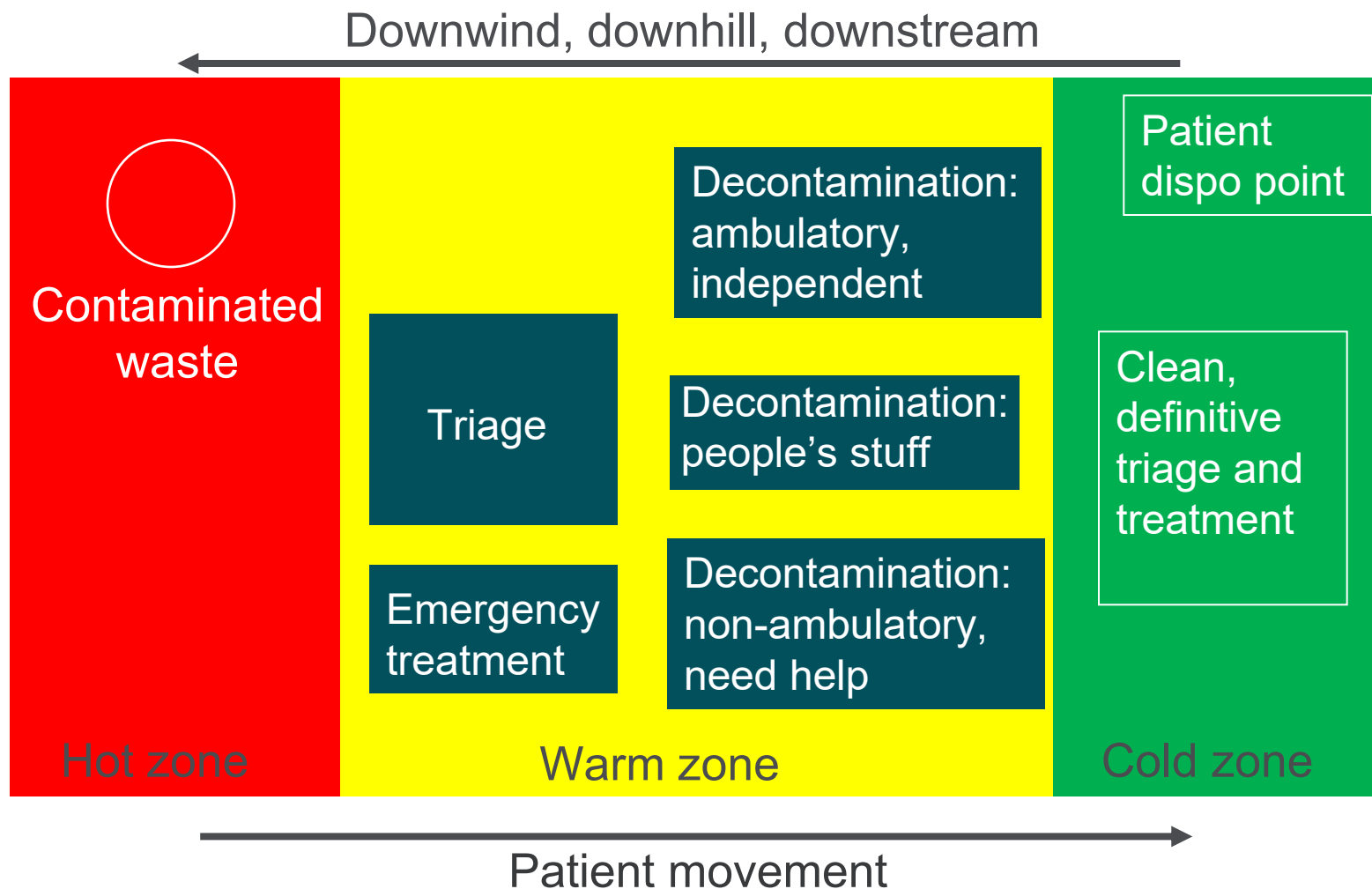
natural
disasters



man-made
disasters

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earthquake



tsunami



flooded emergency
generators fail



nuclear reactor cores
overheat



release of cesium-137,
iodine-131

Remembering the Fukushima Nuclear Disaster Ten Years Later

The 9.0-magnitude earthquake in 2011 remains the largest in Japan's recorded history



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earthquake



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flooded emergency
generators fail



nuclear reactor cores
overheat



release of cesium-137,
iodine-131

Another cautionary tale:
Neyshabur/Nishapur train
disaster
18 Feb 2004



Photo credit: matin fattahi https://en.wikipedia.org/wiki/Nishapur_train_disaster

Over 300
killed

Over 400
injured



Photo credit: Hasan
Sarbakhshian / AP
<https://www.nbcnews.com/id/wbna4300626>



I got displaced too 🥺

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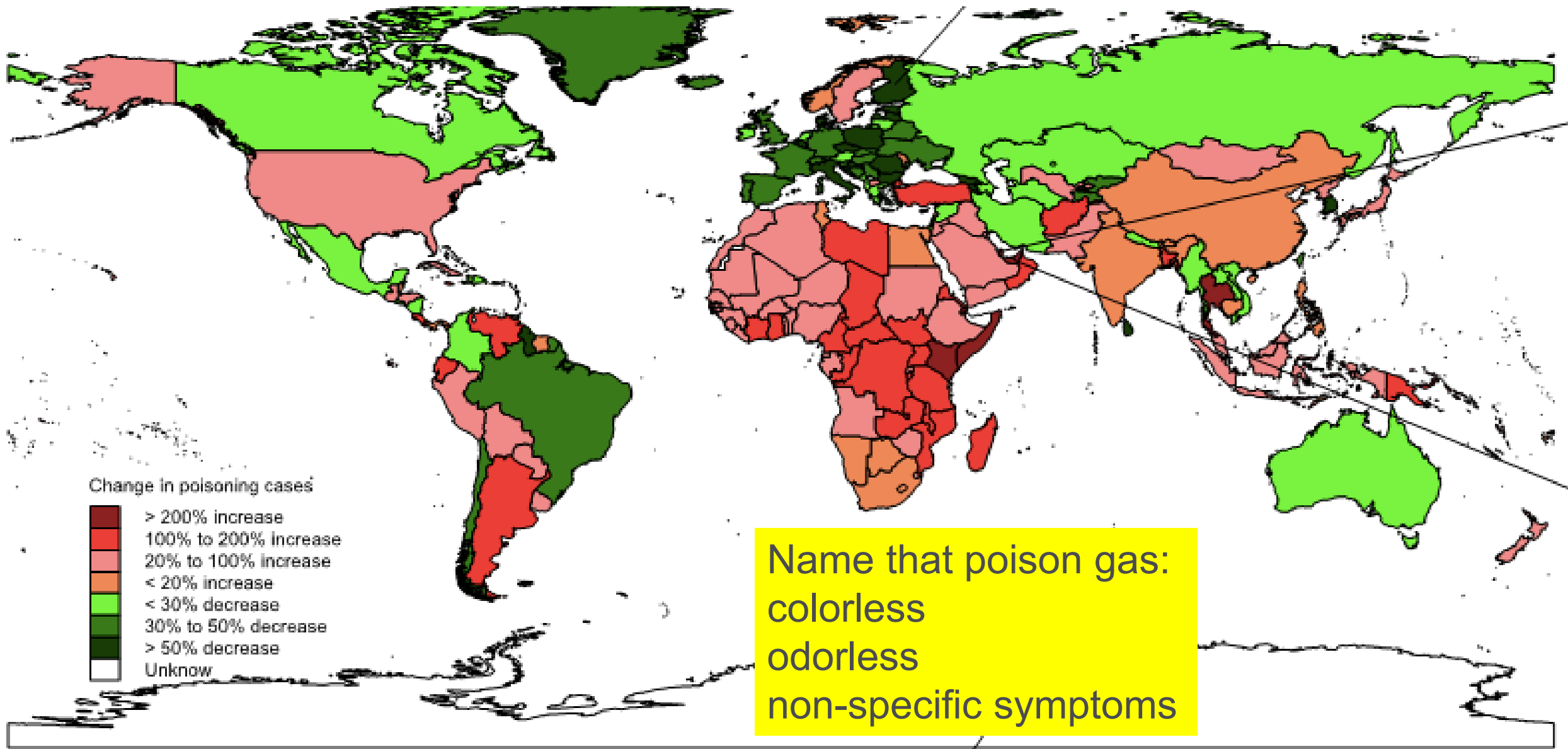
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back to fire and
flammables...



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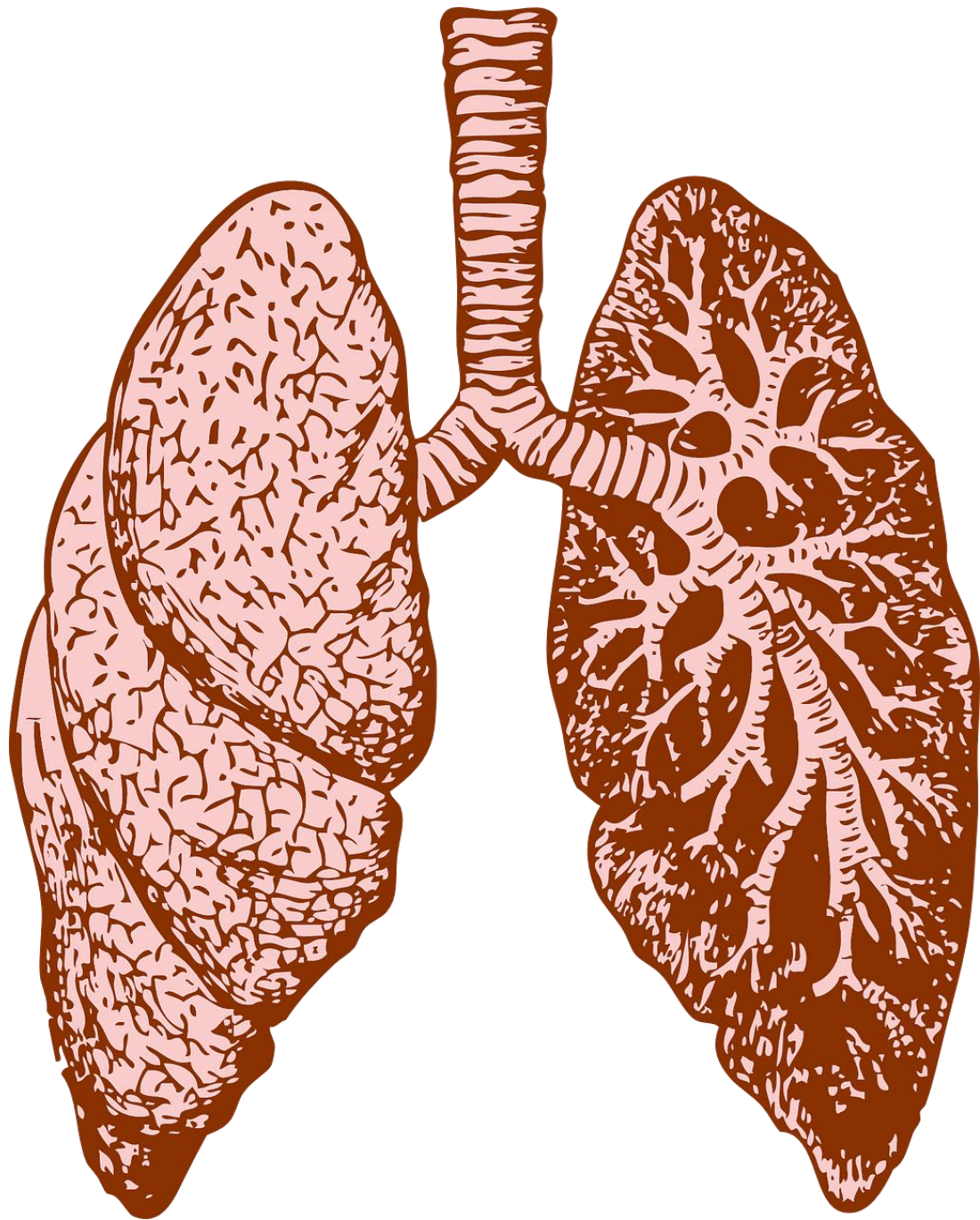
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chemical exposures



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example: pulmonary irritants

coughing, dyspnea, maybe eye/skin irritation

remove from exposure + decon (in case of skin irritation) + supportive care



biologic exposures

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radiation exposures

a brief primer:

radiation = energy as particles or waves

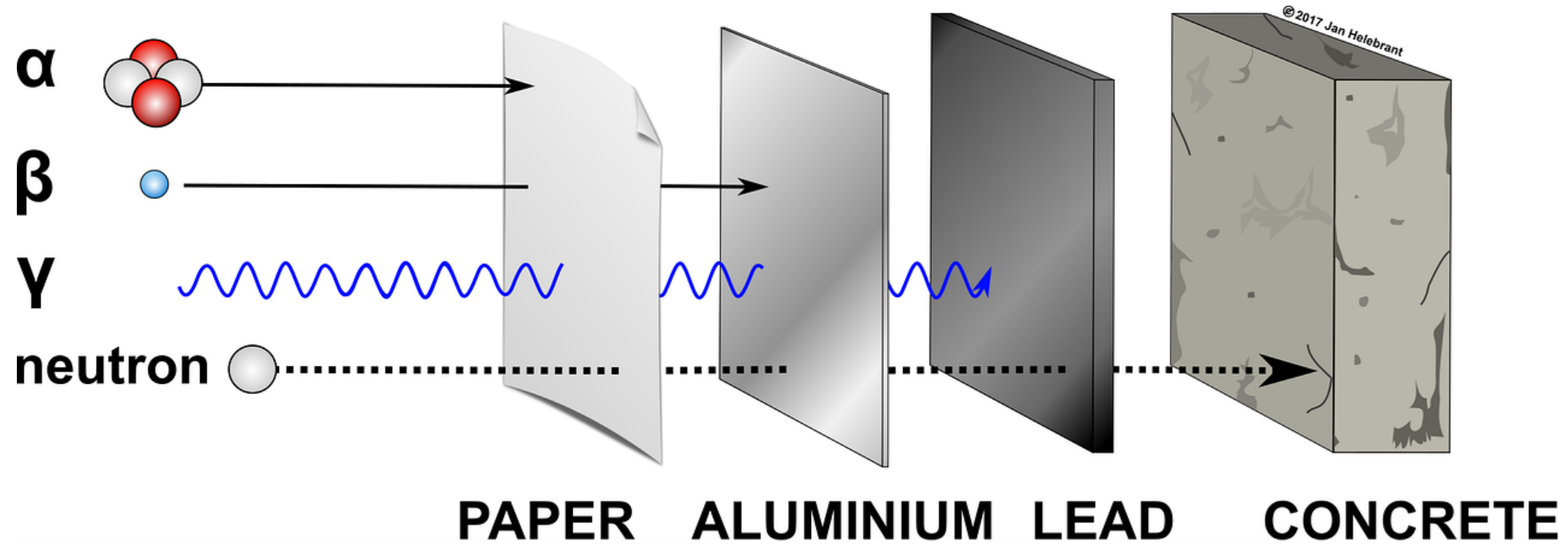
principles of protection:

time

distance (inverse square law)

shielding

Penetrating power of different types of radiation



full face mask with HEPA
filter (or wet cloth)

neck seam taped

don't bring this

splash-proof outerwear

two pairs of gloves, cuffs
taped

socks tucked under clothes,
cuffs taped

waterproof shoe covers



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full face mask with HEPA
filter (or wet cloth)

neck seam taped

instead, wear this (clip on dosimeter)

splash-proof outerwear

two pairs of gloves, cuffs
taped

socks tucked under clothes,
cuffs taped

waterproof shoe covers



decontamination: special
considerations





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special topics: potassium iodide (KI)

Age	KI dose (mg)
Birth to 1 month old	16
1 month < 3 years	32
> 3 years to 18 years	65
> 18 years or $\geq$ 70 kg	130

special topics:
dairy milk and
breastmilk



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Poison Control Center

1-800-222-1222

Chemtrec

1-800-262-8200

www.chemtrec.org

CDC

1-800-CDC-INFO

www.cdc.gov

REAC/TS

865-576-3131

<https://orise.orau.gov/reacts/index.html>

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