East Tennessee
Voluntary Organizations
Active in Disasters

# Cross Contamination & Microbes

Presented by:
Kristina Greenway
865-740-8023
2/04/2016 9:40am


Individuals

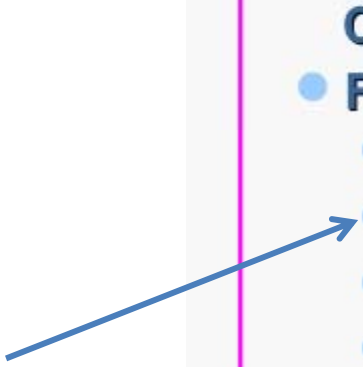
- Volunteer … unify your organizations,
- Personally active,
- Here to Help when a disaster hits your community … THANK YOU!

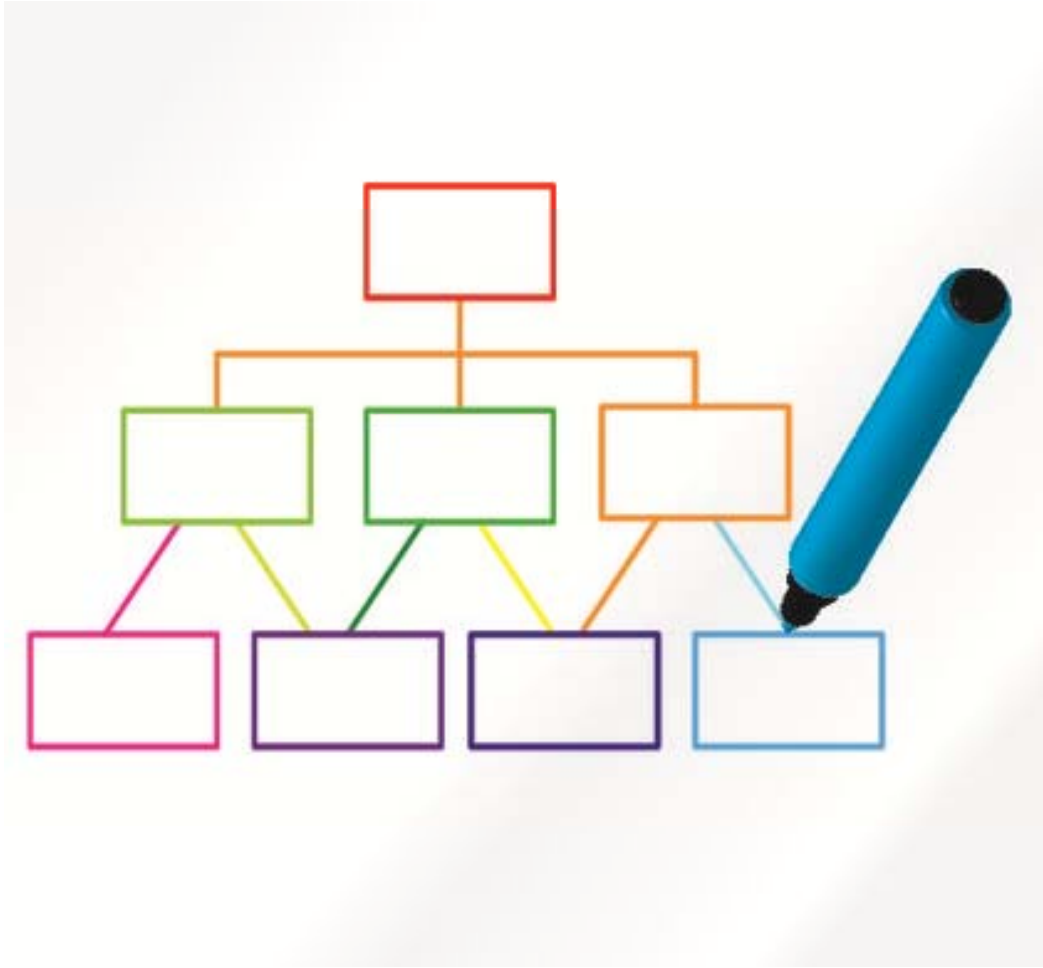
# In the early 1920's …

Describe social changes and technological advances … a time of boundless change!

# Classical Theories of Organizations

- Emerged in early part of the twentieth century.
- Models were military and the Catholic Church.
- Features
  - Strict CONTROL of workers
  - Absolute CHAINS of COMMAND
  - PREDICTABILITY of behavior
  - UNIDIRECTIONAL downward influence





**Who has which**
**Roles & Responsibility**
**when we go into a structure?**

# Mold Has Been Around for Ages
# First protocol was written long ago …

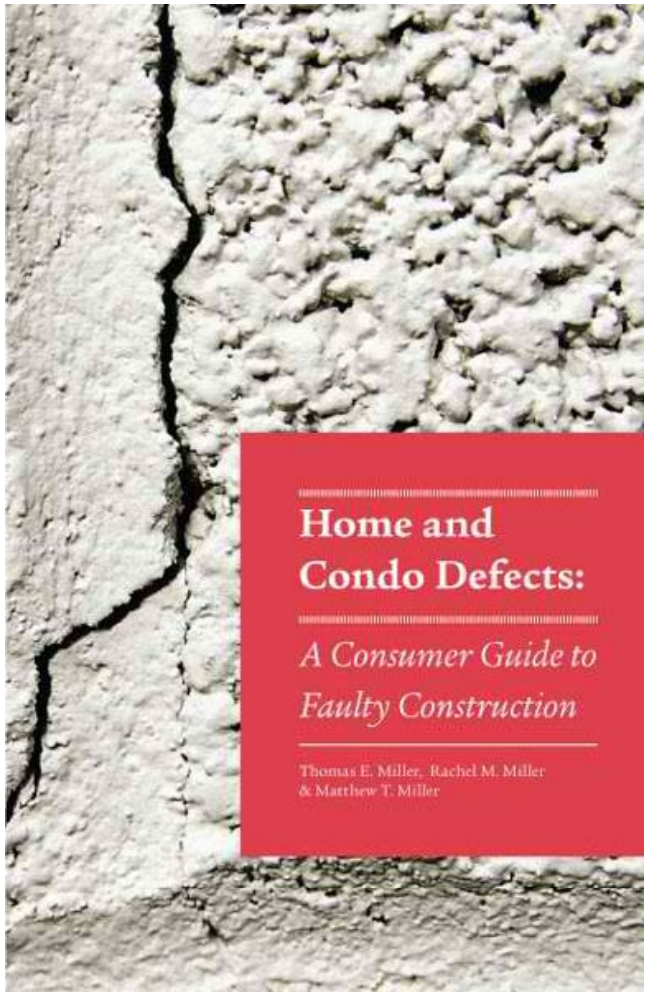
## Leviticus 14:33-53 -- Cleansing From Mildew*

33 The Lord said to Moses and Aaron, 34 "When you enter the land of
Canaan, and I put a spreading mildew in a house in that land, 35 the owner
of the house must go and tell the priest, "I have seen something that looks
like mildew in my house." 36 The priest is to order the house to be emptied
before he goes in to examine the mildew, so that nothing in the house will
be pronounced unclean. The priest is to examine the mildew on the walls,
and if it has a greenish or reddish depressions that appear to be deeper
than the surface of the wall, 38 the priest shall go out of the doorway of the
house and close it up for seven days. 39 On the seventh day the priest shall
return to inspect the house. If the mildew has…

# First there was…

# Faulty Construction

- **Lawsuits** are in state and federal court
- **Regulatory Organizations** such as State Health Agencies, State Attorney Generals and the outcome of litigation are defining the future of how we conduct mold mitigation and remediation and how mold liability is handled.



# Microbes and the History of Mold Awareness

- Litigation Prior to 1993 Was Limited

➢ **Initial cases were:**

**Landlord-Tenant**

# Federal and State Governments

- New York City Guidelines
  - Only government source of mold **GUIDELINES** prior to April 2, **2001**
  - In 2001, States began adopting the NYC Guidelines
- United States Environmental Protection Agency (EPA)
- Issues April 2, 2001 GUIDELINES:
  - "*Mold Remediation in Schools and Commercial Buildings*"
    - First federal specifics …

# National Awareness

**Title:**

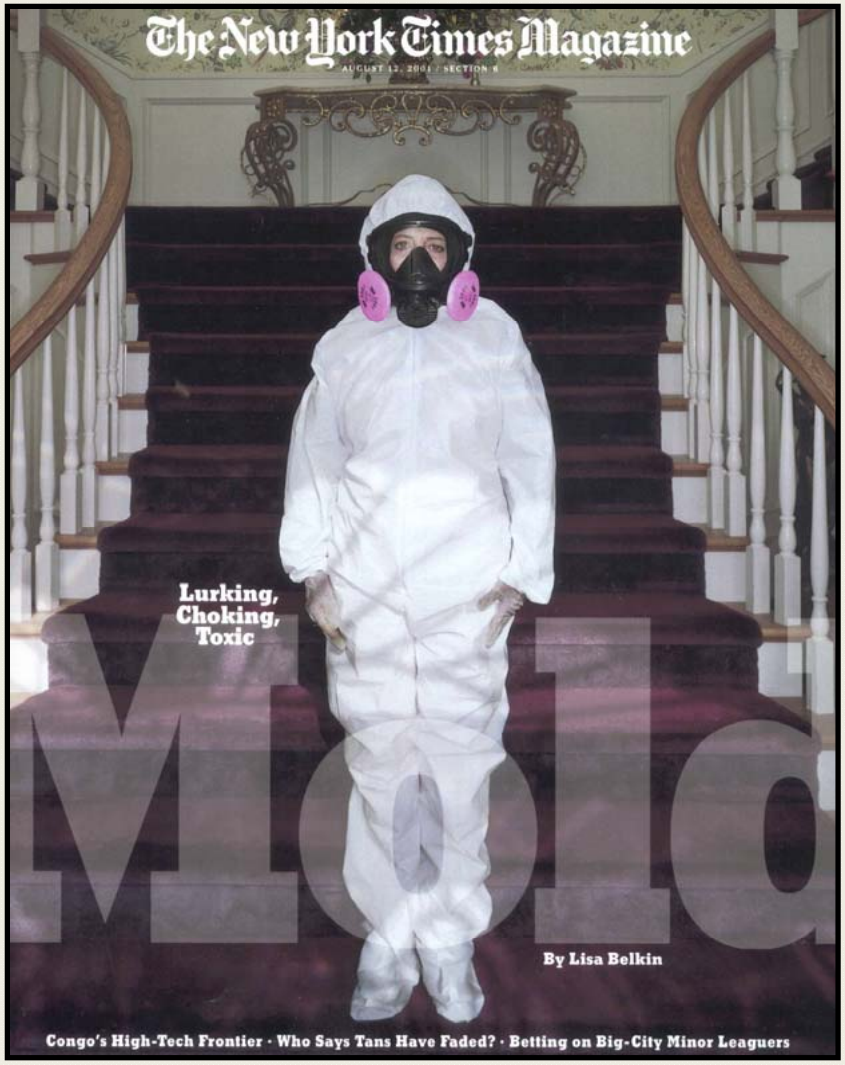
**Haunted by Mold**

**Written By:**

**Lisa Belkin**

**Issue:**

**August 12, 2001**



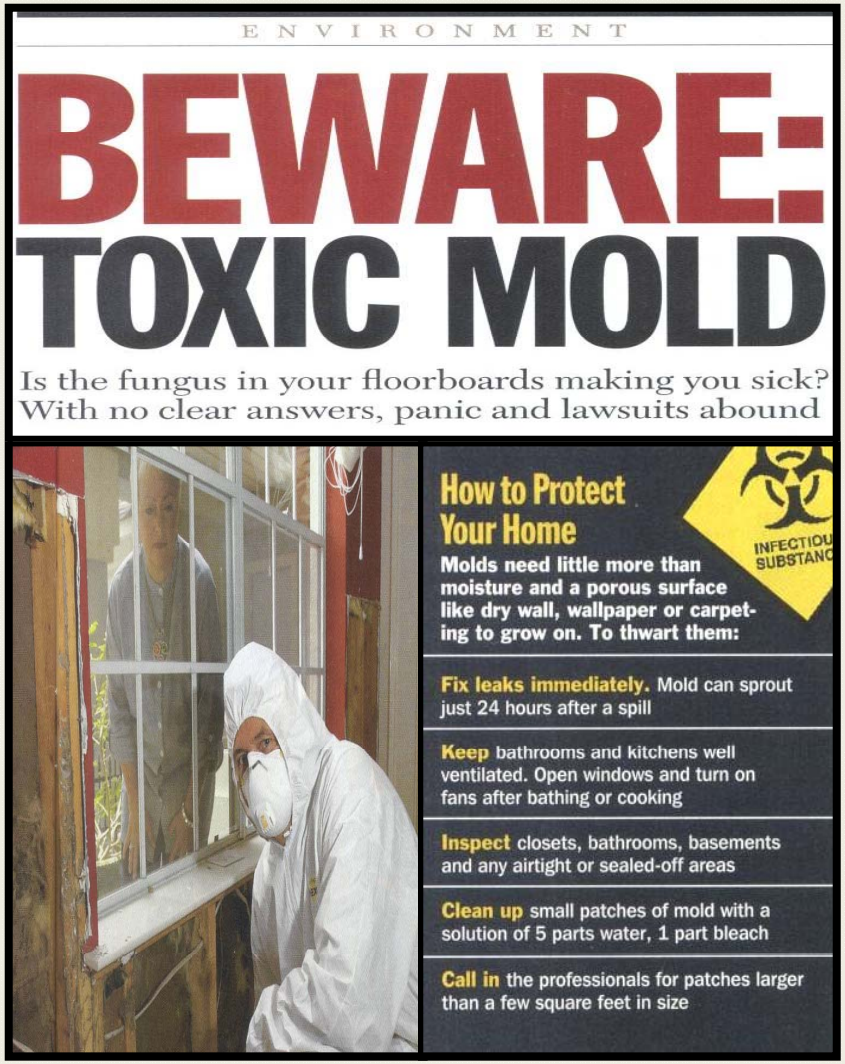
# “Ballard Mold Lawsuit”

Austin Texas.

Settled with a $32 Million Lawsuit against an Insurance Company and the power of the media changed many worlds…

Especially YOUR!.

# National Awareness



ENVIRONMENT

**BEWARE: TOXIC MOLD**

Is the fungus in your floorboards making you sick? With no clear answers, panic and lawsuits abound

**How to Protect Your Home**

**Molds need little more than moisture and a porous surface like dry wall, wallpaper or carpeting to grow on. To thwart them:**

**Fix leaks immediately.** Mold can sprout just 24 hours after a spill

**Keep** bathrooms and kitchens well ventilated. Open windows and turn on fans after bathing or cooking

**Inspect** closets, bathrooms, basements and any airtight or sealed-off areas

**Clean up** small patches of mold with a solution of 5 parts water, 1 part bleach

**Call in** the professionals for patches larger than a few square feet in size

**Title:**

**Beware: Toxic Mold**

**Written By:**

**Anita Hamilton**

**Issue:**

**July 2, 2001**

# National Awareness



**Title:**

**Invisible Killers**

**48 Hours Original Air Date:**

**September 28, 2000**

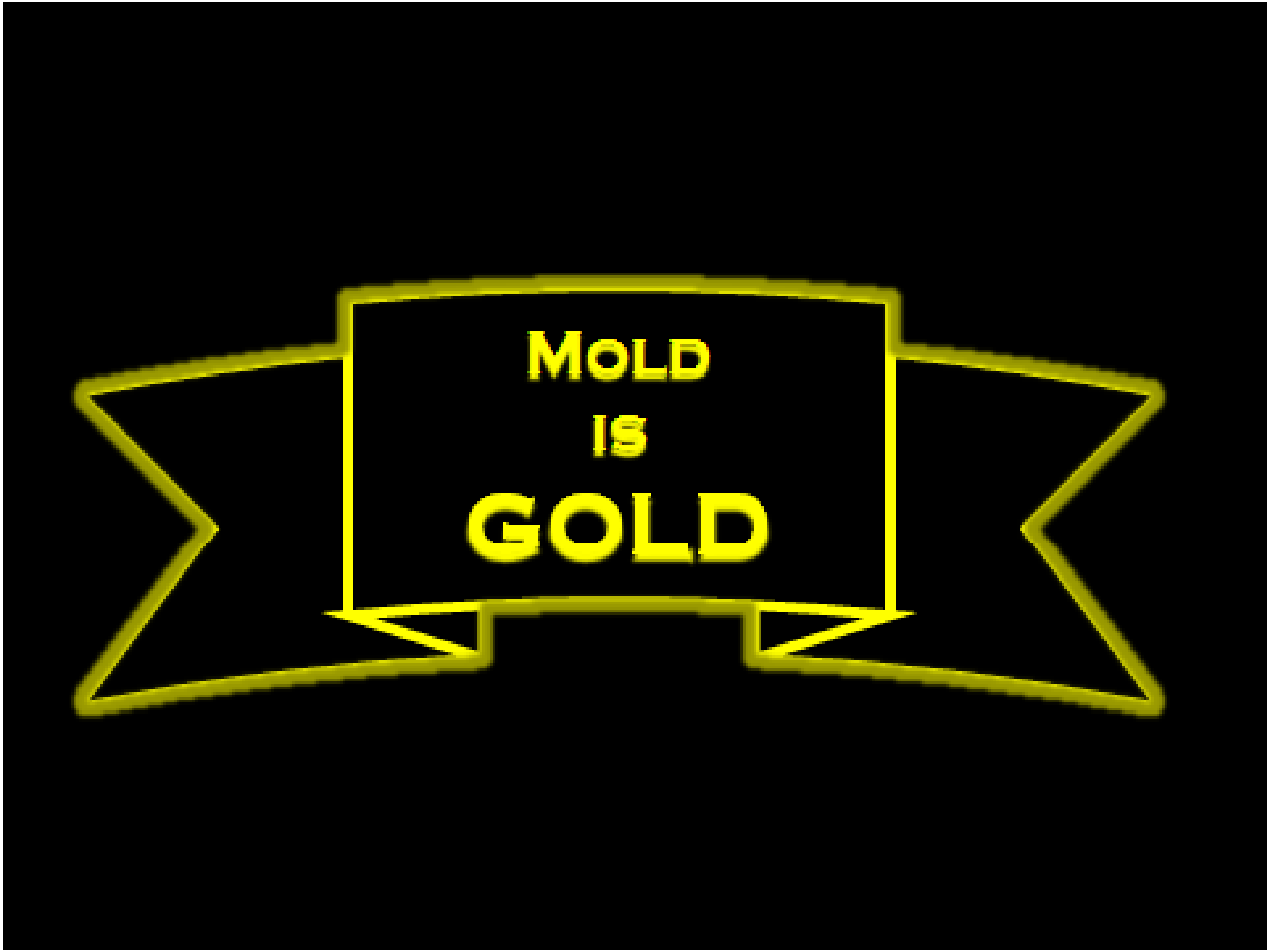

THE NATION'S NEWSPAPER
USA TODAY
THE POWER OF THE MEDIA!

# Participants in the Mold Issue

- Federal and State Governments
- Insurance Companies
- Attorneys
- Restoration professionals
- Industrial Hygienists and Indoor Environmental Professionals
- Realtors and Property Managers
- Buildings, Building Owners and Occupants

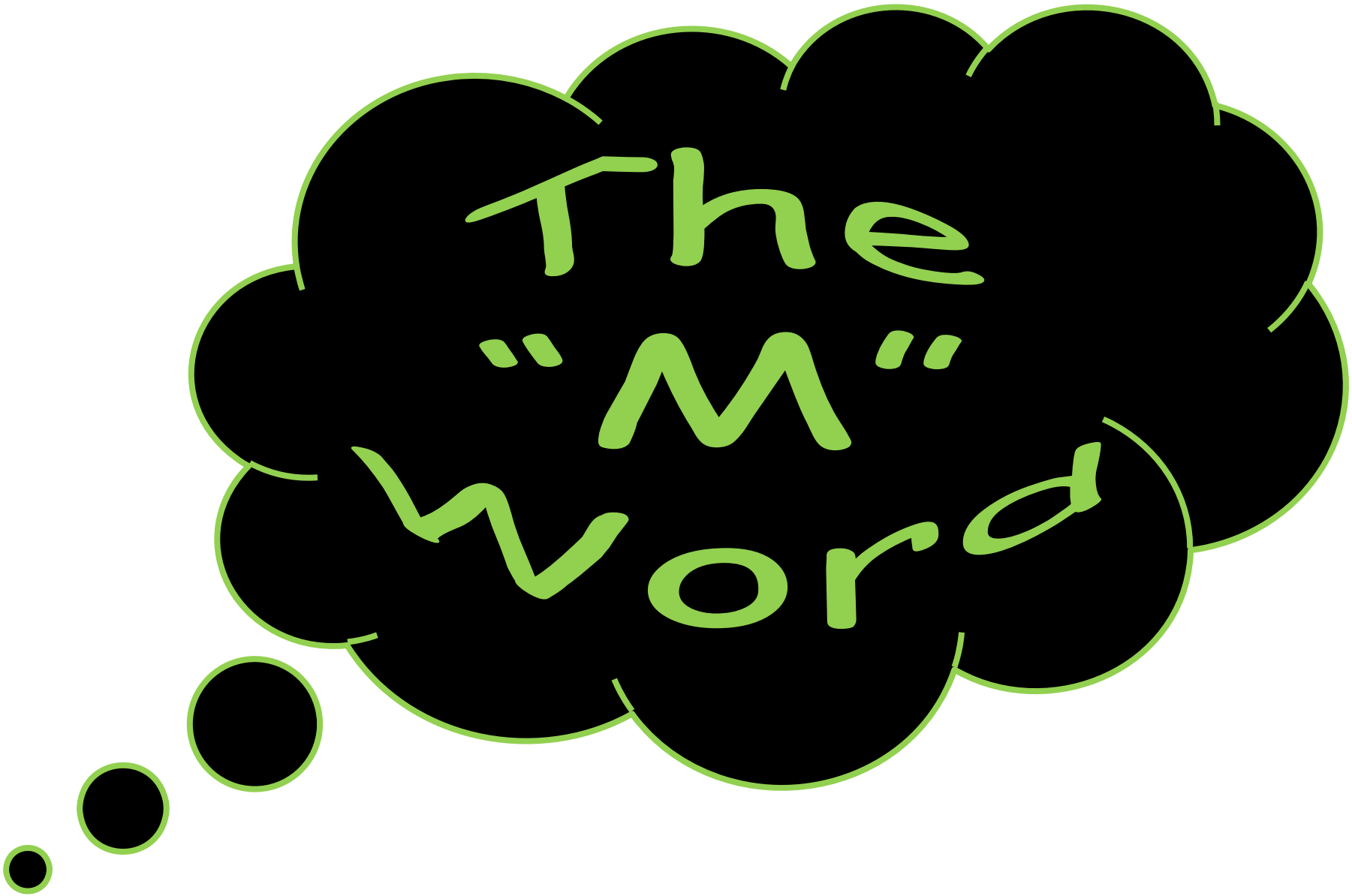
# Attorneys

- Prosecution and defense preparation
- Public awareness of issue increased

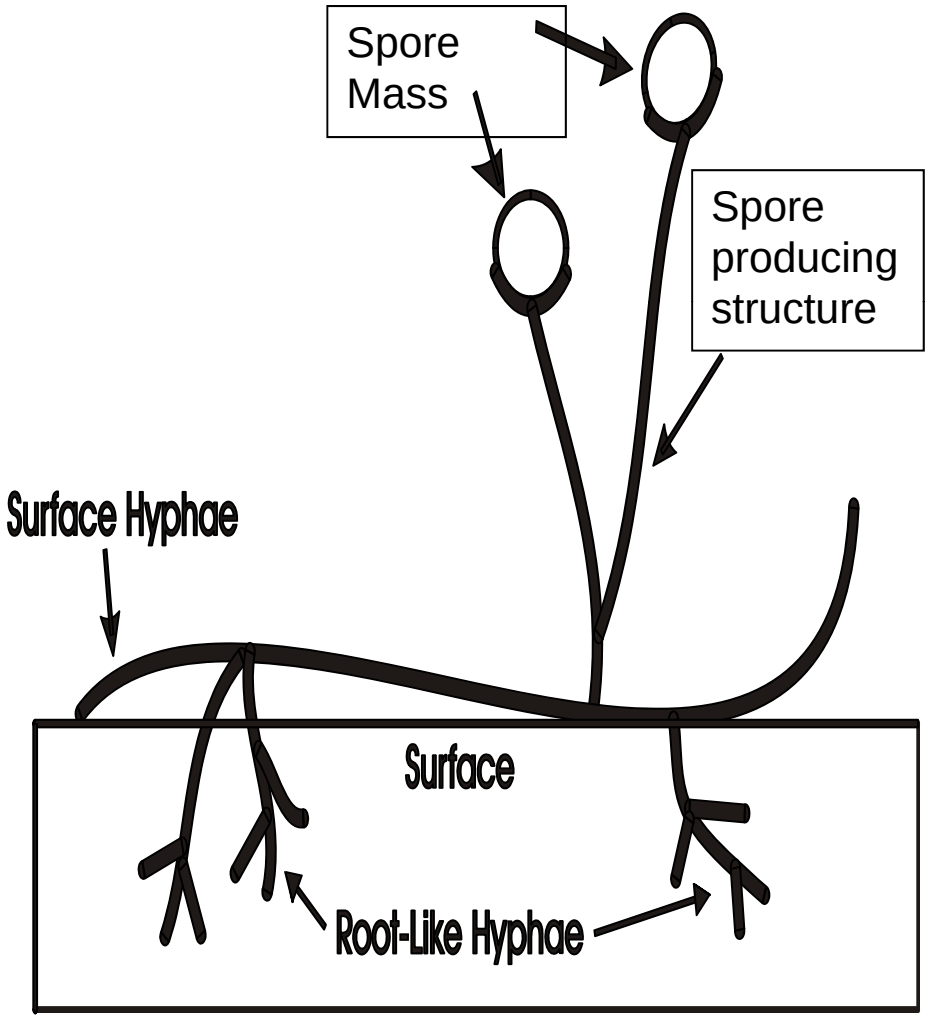

MOLD
IS
GOLD

# Insurance

- Coverage, exclusions and prevention
- Employee, customer and vendor safety
- No Government regulation
- Vendor mitigation vs. remediation
- Coverage for restoration companies
  - Underwriting
    - *Who is covered?*
    - *What is covered?*


The
"M"
Word

# Mold/FUNGI
# Grows by Sending Out Branches




- Hyphae (*High Fee*)
- Root-like Hyphae
- Surface Hyphae
- Spore Producing Structure

In the spirit of Mr. Owl,
from a 1970's TV commercial,

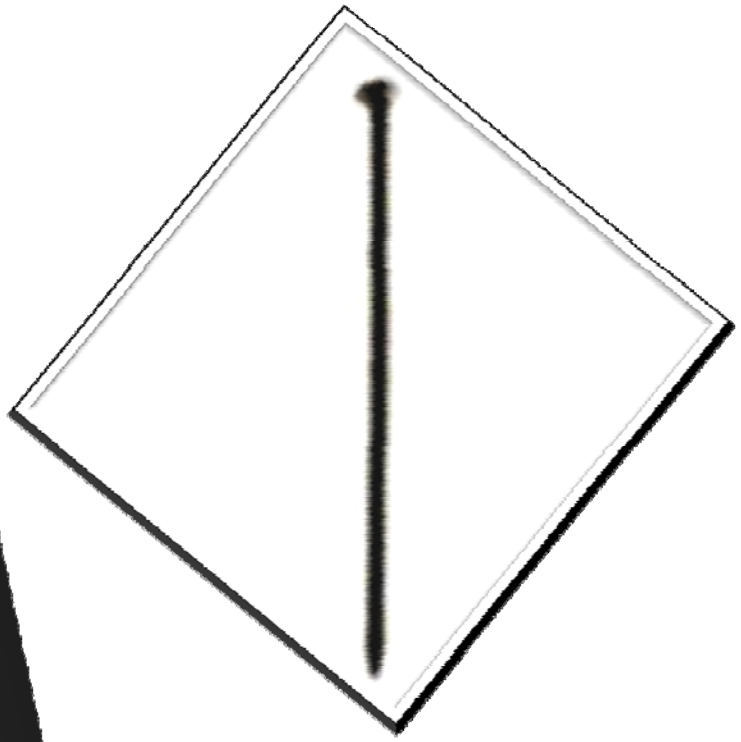
*How many ...*

How many spores

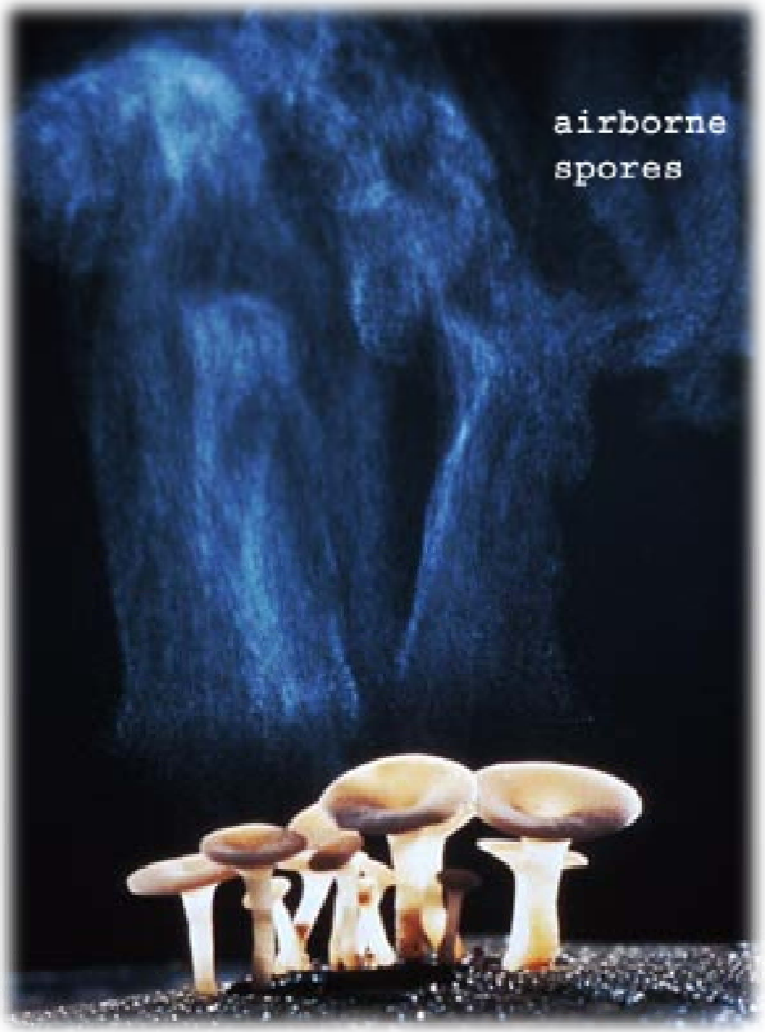
Does it take to

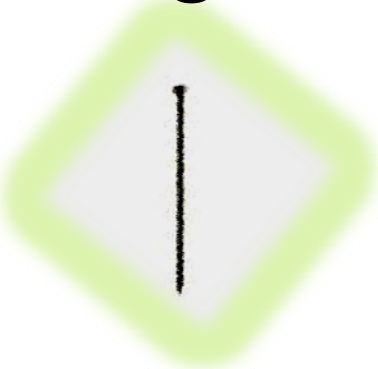
Fill the top of

This Pin's Top?



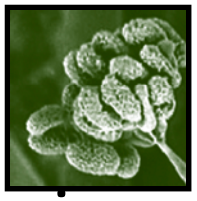
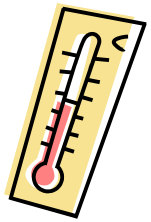
# 250,000 Spores can fit on top of head of a sewing needle!



When Air hits FUNGI is Likened unto a: _____

# FUNGI Growth Requirements

- **FUNGI Spores** 
- **Food Source** (organic material)   
- **Temperature**  (59º F – 86º F)*
- **Water** 
- **Time** (as little as 2 days) 


Territorial
11/02/2009

## Fight or flight!

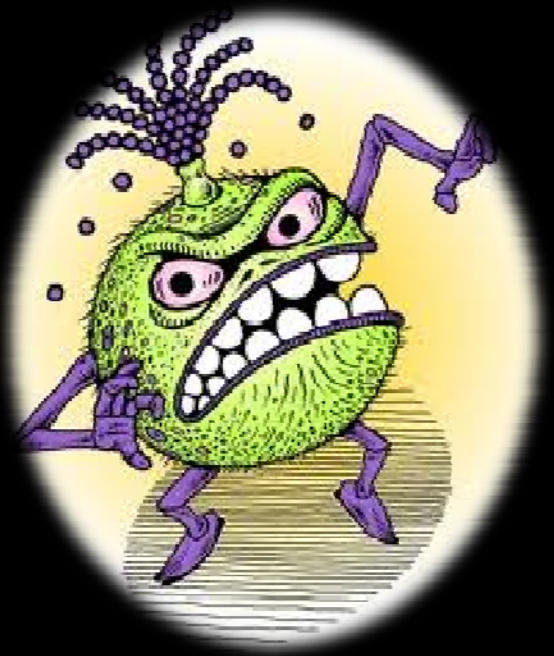
- If attacked, the spore mass ruptures and thousands of spores become airborne to preserve life!
- Threatened molds may wage chemical warfare:

***Mycotoxins***

# What Makes Fungi Harmful?

- **Mycotoxins**
  - Produced by some fungi
  - Toxic
  - Attached to mold spores and fragments of mold
- Mold is an **"Invisible Enemy"**

  •***Growing mold colonies eventually become visible, but…***
  - You cannot see mold spores
  - Disturbance of mold causes spore mass to aerosolize, releasing spores into air stream
  - You cannot visually determine if materials are contaminated with settled spores

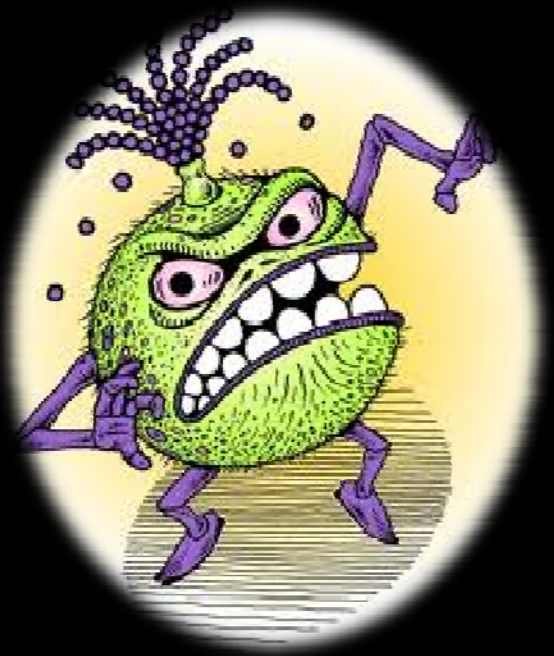



Always there


YOU
STAR WARS
BATTLEFRONT

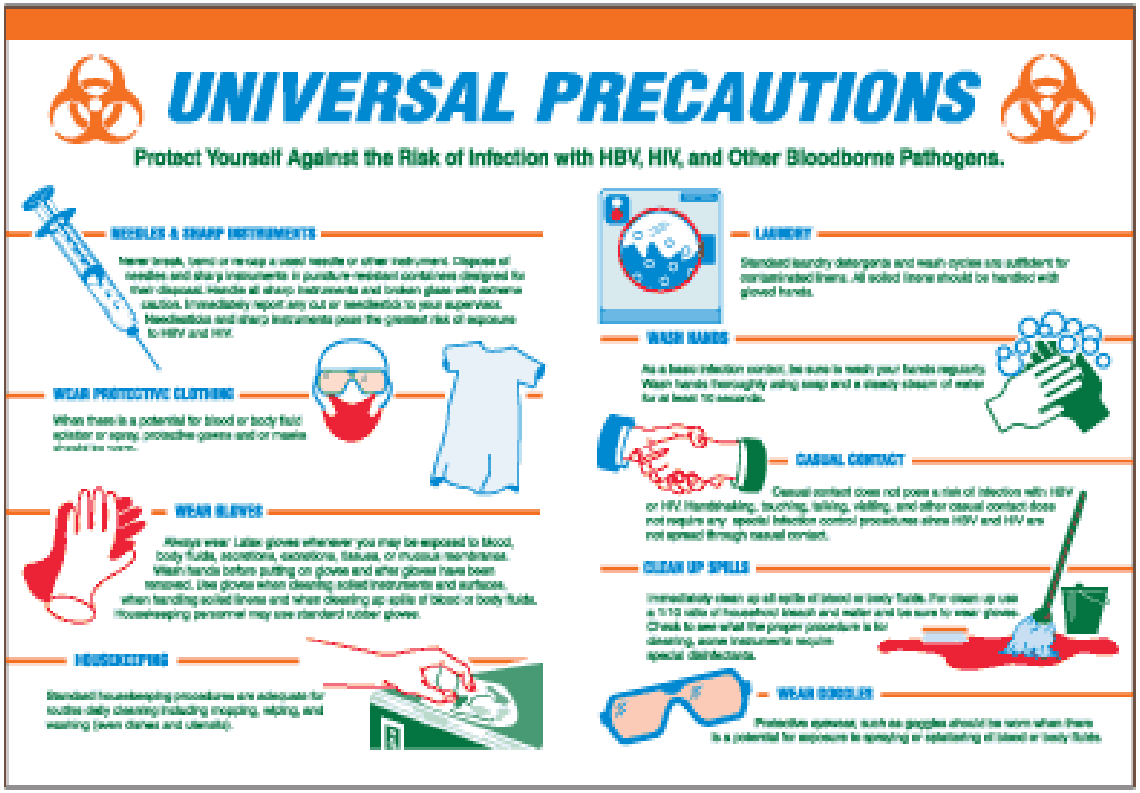

YOU
STAR WARS
BATTLEFRONT
EA


YOU




STOP
PERSONAL
PROTECTIVE
EQUIPMENT
REQUIRED
BEYOND THIS
POINT

Extra ACTIONS taken to control infection / cross contamination …



# Ones Reality ~ OR ~ Perception

## “Hey this is picture worthy”

# Ones Reality ~ OR ~ Perception

## “Hey this is picture worthy”

# PERCEPTION OF RISK!

# PERCEPTION OF RISK!

# AND

# UNDERSTANDING HOW TO PROTECT YOURSELF USING

# UNIVERSAL PRECAUTIONS

# &

# P.P.E.!

**Makeup is NOT PPE**

**Don't be a Wo-MAN!**

**Woman can do things men can't …**

**as Men can do things women can't.**

# TAKE NO SHORT CUTS!

# USE P.P.E.

# UNIVERSAL PRECAUTIONS

#1
PPE
Safety
1st


#2 Build Containment
And Clean


#3
Air Scrubber
AS-2
500
DRIEAZ

# BEWARE OR "Be Aware"


THE NATION'S NEWSPAPER
USA TODAY
Fungus may have been
fatal Cleveland kids
THE POWER OF THE MEDIA!

# EDUCATED!

# BEWARE OR "Be Aware"


NATIONAL INSTITUTE OF DECONTAMINATION SPECIALISTS
N I D S
ABRA
CERTIFIED ABRA BIO-RECOVERY TECHNICIAN
CRIME SCENE DO NOT
Mourning
Murder
Passed Away
FIRE LINE - DO NOT CROSS
POLICE LINE DO NOT CROSS
Bloodborne Pathogen Exposure Control Plan
BIOHAZARD
INFECTIOUS WASTE
BLOODBORNE PATHOGENS
Require Caution
OSHA Standard Number:
1910.1030
Cleanup Hoarding
INHALATION HAZARD
2
Medical Waste
Clean-up
Certified: Microbial Clean-up
IICRC
Institute of Inspection Cleaning and Restoration Certification
CAUTION
Kristina Greenway, Knoxville, TN


**NIDS** CERTIFIED: National Institute of Decontamination Specialists
**ABRA**: American Bio-Recovery Association
**IICRC** Microbial Cleanup
Blood Borne Pathogen Clean
Hoarding Cleaning
Injury Prevention Program
Microbial Cleanup
Biohazard
Bio, Biological, Infectious and or Medical Waste
Accidents, Blood present in floods … what else.
Suicides
Murders
Decomp AKA Decomposition
Blood Clean Up – 5 senses …
First Responders … be ware!

https://www.youtube.com/results?q=blood+cleanup+Kristina+Greenway


10/18/2011

# **Do Not Assume** "Mold Is Harmless"

- Excessive dampness in buildings creates conditions for mold to grow and multiply

- Water damage conditions can lead to unhealthy indoor environments

Solution is to maintain buildings to prevent intrusion of moisture and excessive dampness.

## **Do Not ASSUME** "Fungi Causes Illness"

- Scientific evidence <u>not available to link</u> mold and damp buildings to health effects.
- Separate <u>health effects resulting from</u>
  - Exposure to mold
  - Other factors present in the indoor environment.

# Been there done that!

Proverbs 16:18

**PRIDE** goeth before destruction, and a haughty spirit before a fall!


HEPA VAC
09/27/2011

Microbes that are where they belong … inside are happy and healthy and “all is good”.

When these same microbes find themselves outside their territory or outside our body, they are not happy.

This is when I say, “Let the microbial warfare begin” … and this; my friends is where the human races problems begin.

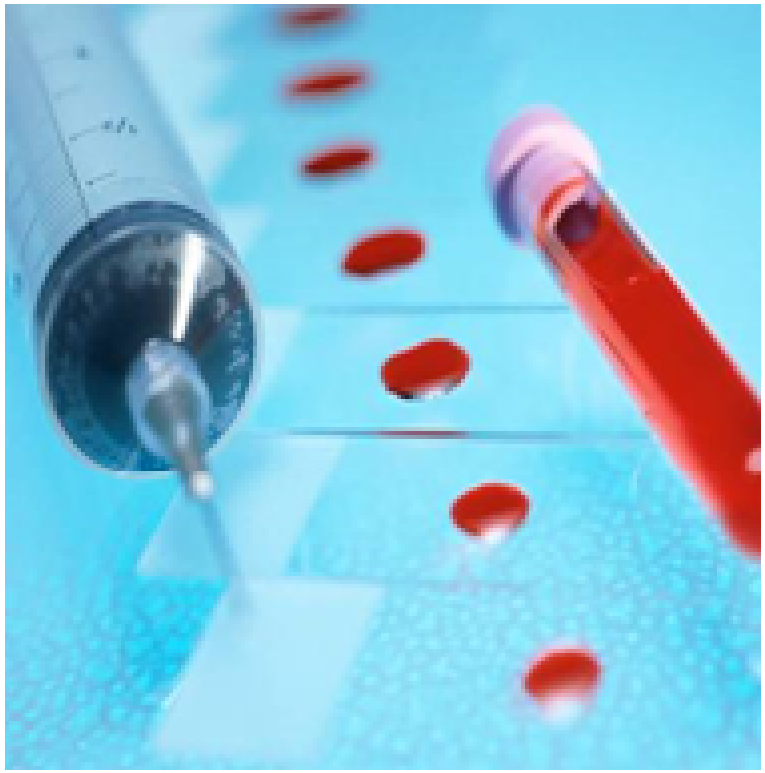
We hope this helps … because we care!


F.D. N.Y.


JEMS
JOURNAL OF EMERGENCY MEDICAL SERVICES
AFTEREFFECTS
A sobering look into how the culture of EMS affects provider stress & suicide statistics, p. 30
ALSO INSIDE
Police use of force injuries, p. 44
Treating sexual assault victims, p. 58

# Bloodborne Pathogens

- Pathogenic micro-organisms present in human blood that can lead to diseases
- Most common in US
  - Human immuno-deficiency virus (HIV)
  - Hepatitis B (HBV)
  - Hepatitis C (HCV)



# Hepatitis

- **Hepatitis A**
- **Hepatitis B**
- **Hepatitis C**
- Hepatitis D
- Hepatitis E
- Viruses which attacks the liver
- Liver performs many functions vital to life
  - Blood reservoir, blood filter, carbohydrate, fat, protein metabolism, storage of vitamins, iron, etc.

# Viral Hepatitis - Overview

| | Type of Hepatitis | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| Source of virus | feces | blood-derived | blood | | feces |
| Route of transmission | fecal-oral | percutaneous permucosal | percutaneous permucosal | percutaneous permucosal | fecal-oral |
| Chronic infection | no | yes | yes | yes | no |
| Prevention | pre/post-exposure immunization | pre/post-exposure immunization | blood donor screening risk behavior modification | pre/post-exposure immunization risk behavior modification | ensure safe drinking water |

## CATEGORIES OF BIO-MEDICAL WASTE

Chemicals treatment using at least 1% hypochlorite solution or any other equivalent chemical reagent. It must be ensured that chemical treatment ensures disinfections.

◆ Mutilation/shredding must be such so as to prevent unauthorised reuse.

There will be no chemical pretreatment before incineration. Chlorinated plastics shall not be incinerated.

⊕ Deep burial shall be an option available only in towns with population less than five lakhs and in rural areas.

| Option | Treatment & Disposal | Waste Category |
|---|---|---|
| Cat. No. 1 | Incineration /deep⊕ burial | Human Anatomical Waste (human tissues, organs, body parts) |
| Cat. No. 2 | Incineration /deep burial | Animal Waste Animal tissues, organs, Body parts carcasses, bleeding parts, fluid, blood and experimental animals used in research, waste generated by veterinary hospitals / colleges, discharge from hospitals, animal houses) |
| Cat. No. 3 | Local autoclaving/ micro waving/ incineration | Microbiology & Biotechnology waste (wastes from laboratory cultures, stocks or specimens of micro-organisms live or attenuated vaccines, human and animal cell culture used in research and infectious agents from research and industrial laboratories, wastes from production of biological, toxins, dishes and devices used for transfer of cultures) |
| Cat. No. 4 | Disinfections (chemical treatment /autoclaving/micro waving and mutilation shredding ◆ | Waste Sharps (needles, syringes, scalpels blades, glass etc. that may cause puncture and cuts. This includes both used & unused sharps) |
| Cat. No. 5 | Incineration / destruction & drugs disposal in secured landfills | Discarded Medicines and Cytotoxic drugs (wastes comprising of outdated, contaminated and discarded medicines) |
| Cat. No. 6 | Incineration , autoclaving/micro waving | Solid Waste (Items contaminated with blood and body fluids including cotton, dressings, soiled plaster casts, line beddings, other material contaminated with blood) |
| Cat. No. 7 | Disinfections by chemical treatment autoclaving/micro waving& mutilation shredding. ◆ | Solid Waste (waste generated from disposable items other than the waste sharps such as tubing, catheters, intravenous sets etc.) |
| Cat. No. 8 | Disinfections by chemical treatment and discharge into drain | Liquid Waste (waste generated from laboratory & washing, cleaning , house-keeping and disinfecting activities) |
| Cat. No. 9 | Disposal in municipal landfill | Incineration Ash (ash from incineration of any bio-medical waste) |
| Cat. No. 10 | Chemical treatment & discharge into drain for liquid & secured landfill for solids | Chemical Waste (chemicals used in production of biological, chemicals, used in disinfect ion, as insecticides, etc) |
| **Option** | **Treatment & Disposal** | **Waste Category** |

Chemicals treatment using at least 1% hypochlorite solution or any other equivalent chemical reagent. It must be ensured that chemical treatment ensures disinfections.

◆ Mutilation/shredding must be such so as to prevent unauthorised reuse.

There will be no chemical pretreatment before incineration. Chlorinated plastics shall not be incinerated.

⊕ Deep burial shall be an option available only in towns with population less than five lakhs and in rural areas.

The most essential part of hospital waste management is the segregation of Bio-medical waste. The segregation of the waste should be performed within the premises of the hospital/nursing homes. The color coding, type of container to be used for different waste category and suggested treatment options are listed below.

# Respiratory Protection

- Medical clearance
- Annual Fit-Test
- Maintenance
- Proper use

# Ensure the Safety of Others Visiting the Job

- General Duty Clause
  - The employer must provide a workplace free from recognized hazards that are likely to cause death or serious physical harm to employees.
- OSHA Standards
  - Personal Protective Equipment 1910.132
  - Respiratory Protection 1910.134
  - Confined Space Entry 1910.146
  - Lockout/Tagout 1910.147
  - Electrical 1910.303



# Ensure the Safety of Others Visiting the Job

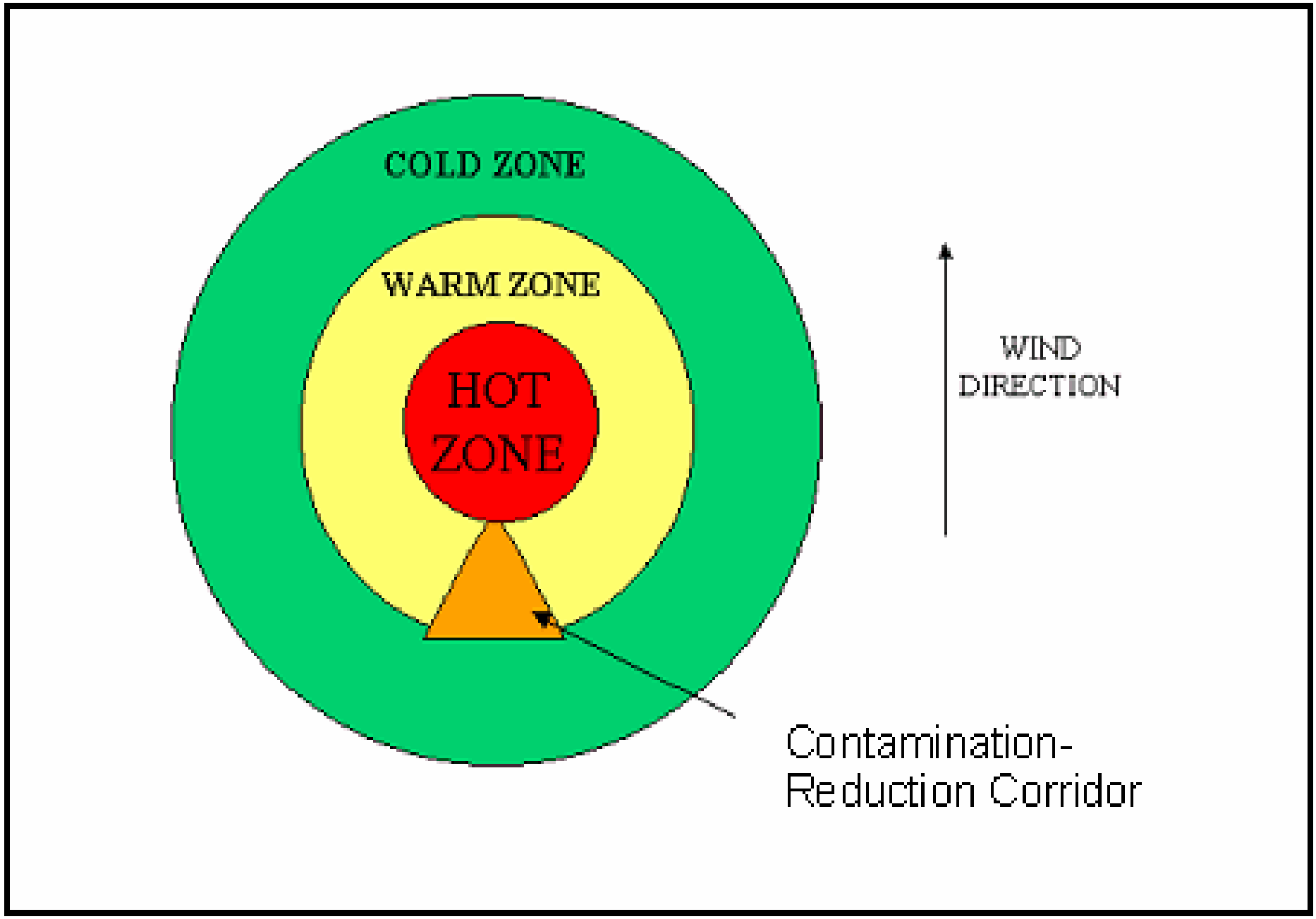
- General Duty Clause
  - The employer must provide a workplace free from recognized hazards that are likely to cause death or serious physical harm to employees.
- OSHA Standards
  - Personal Protective Equipment 1910.132
  - Respiratory Protection 1910.134
  - Confined Space Entry 1910.146
  - Lockout/Tagout 1910.147
  - Electrical 1910.303



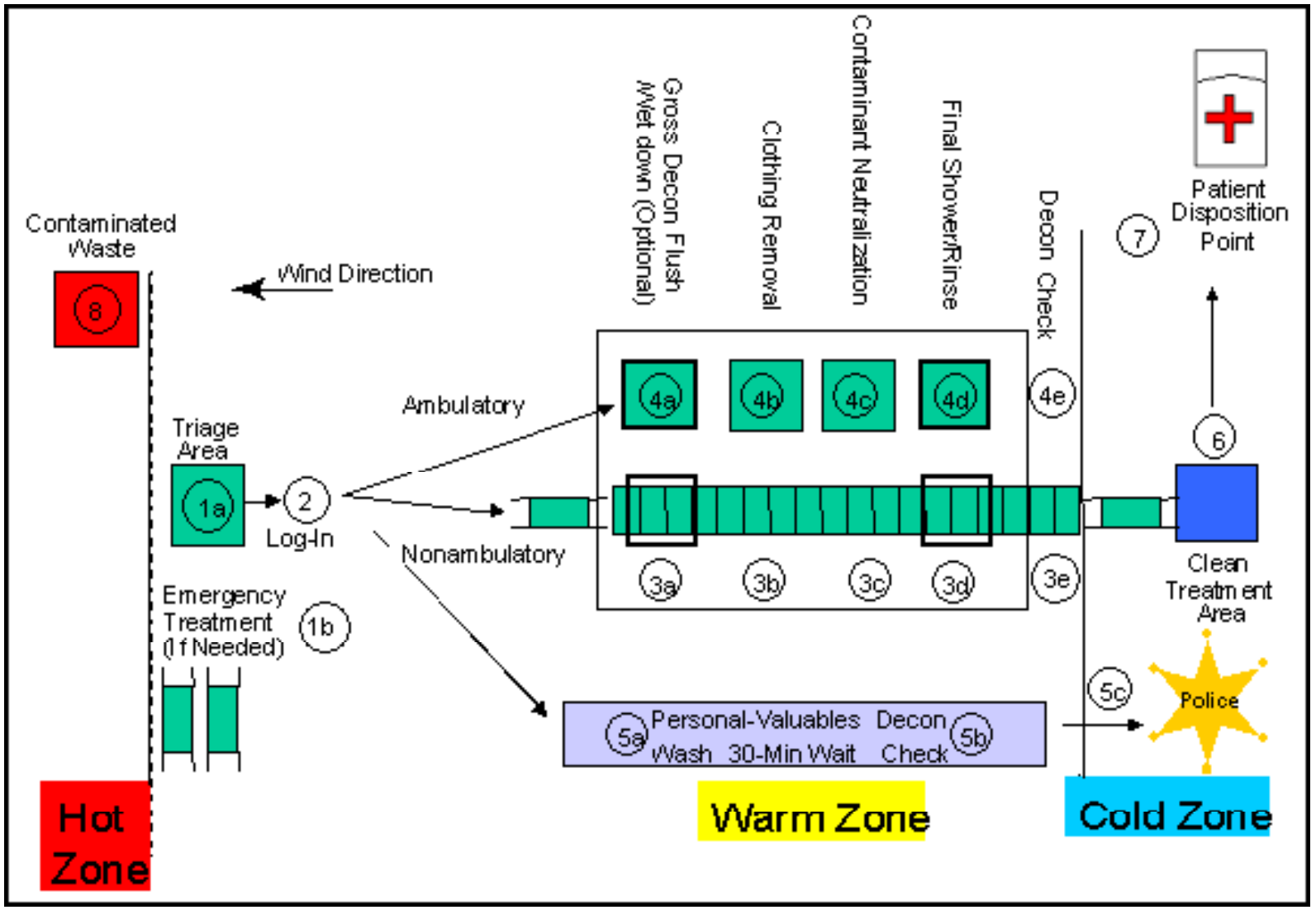
# EPA Guidelines

- Defines PPE requirements into **Minimum**, **Limited** and **Full**
  - EPA recommends powered air purifying respirators for full protection

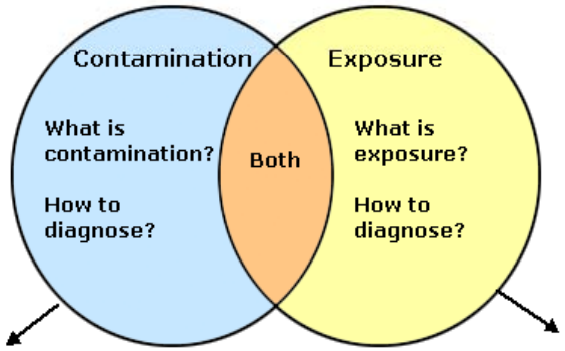




COLD ZONE
WARM ZONE
HOT ZONE
WIND DIRECTION
Contamination-Reduction Corridor

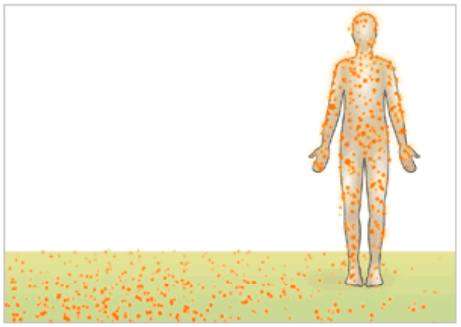
Hazmat incident with established corridors for ambulatory and non-ambulatory personnel to operate in chemical protective clothing.



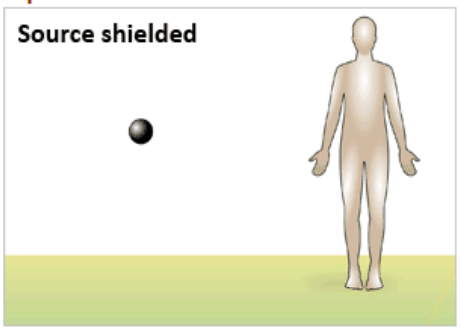
# Differences Between Contamination and Exposure




Contamination:



Exposure:

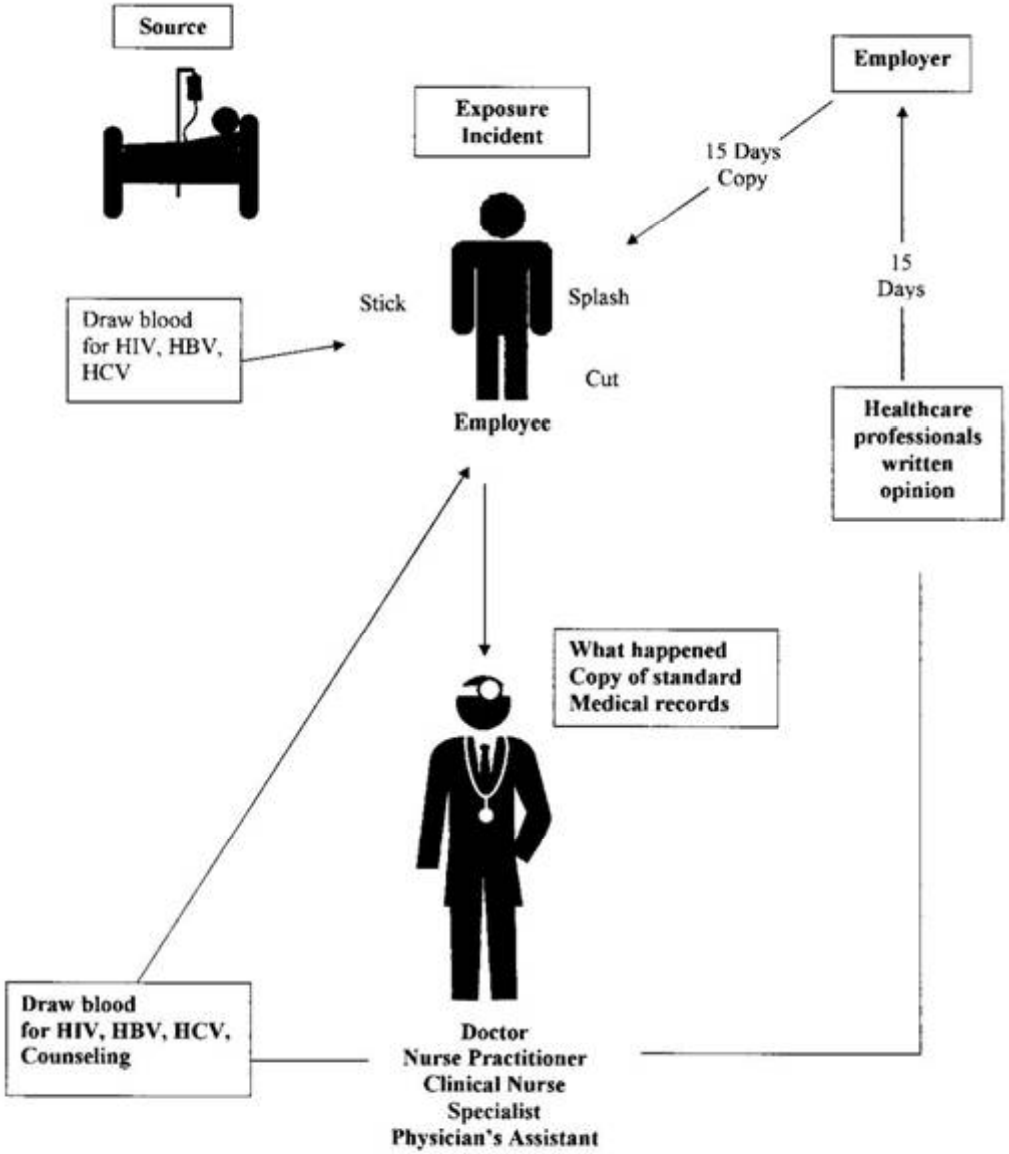



Contamination results when a radioisotope (as gas, liquid, or solid) is released into the environment and then ingested, inhaled, or deposited on the body surface.

Radiation exposure occurs when all or part of the body absorbs **penetrating** ionizing radiation from an external radiation source, as shown in the illustration above.

Exposure from an external source stops when a person leaves the area of the source, the source is shielded completely, or the process causing exposure ceases.

# POST EXPOSURE FOLLOW-UP



# Hero's:

REMEMBER …

1. Contamination *to make (something) dangerous, dirty, or impure by adding something harmful or undesirable to it.* {Contamination is hazardous material

<solid, liquid or gaseous vapor) that physically remains on a person, animal or object.}

2. Exposure *the condition of being subject to some effect or influence*

*<risk exposure to the flu>*

*3. http://www.merriam-webster.com/dictionary/exposure*Decontamination to rid of contamination (as radioactive material)

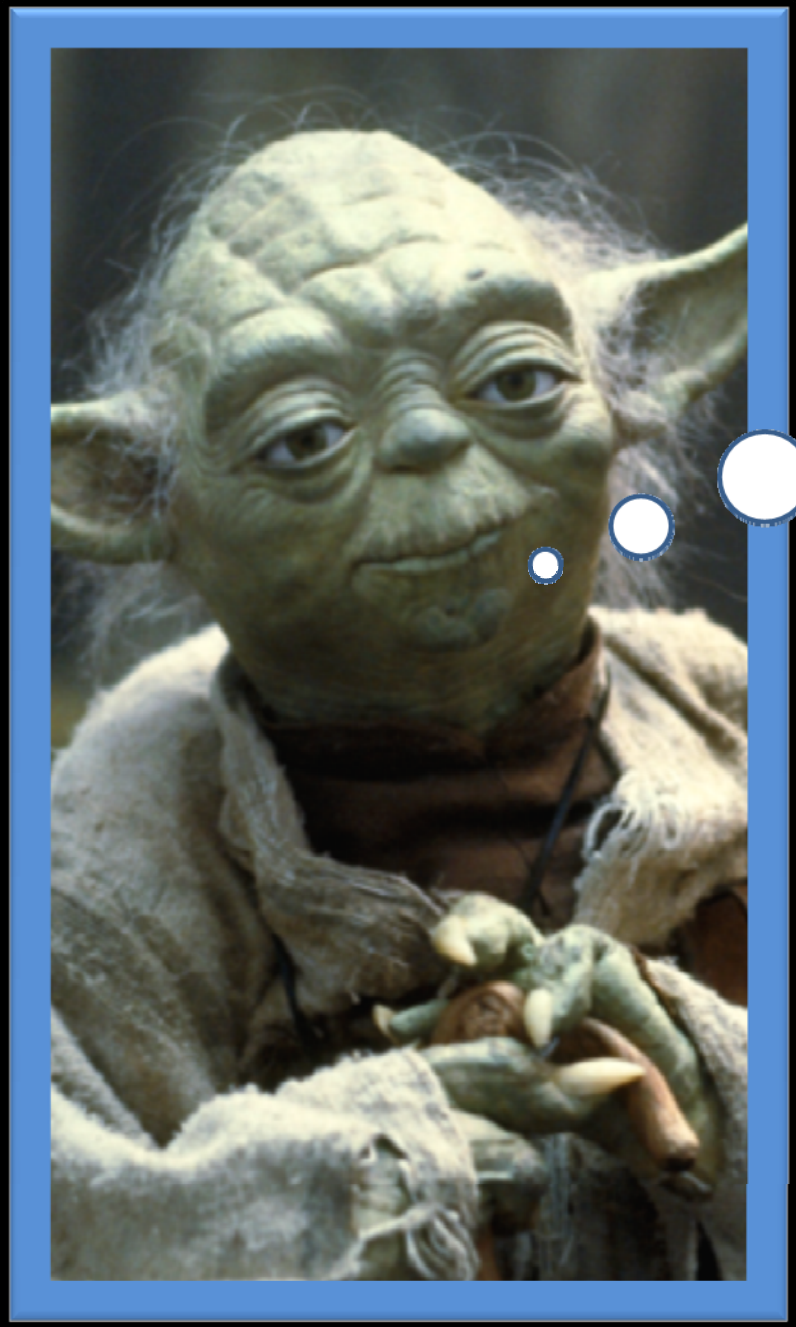
<the physical or chemical process of reducing & preventing the spread of contaminants from persons and equipment at a hazmat incident.>

4. Cross Contamination results from *direct contact* when a "clean" person is contaminated by a "dirty" object or individual. Of particular concern to first responders is whether the patient was exposed to a vapor or gas, because their clothing and hair retains vapors.

**Beyond being "dirty,"* exposure is the term used when a person is subjected to a toxic or harmful substance through any route into the body (e.g., injection, open wound, absorption, inhalation or ingestion). Exposure


F.D. N.Y.


JEMS
JOURNAL OF EMERGENCY MEDICAL SERVICES
AFTEREFFECTS
A sobering look into how the culture of EMS affects provider stress & suicide statistics, p. 30
ALSO INSIDE
Police use of force injuries, p. 44
Treating sexual assault victims, p. 58



Mind what you have learned. Save you it can.