HEALTH AND SAFETY

FIRE CHIEF DEVELOPMENT PROGRAM

PREPARED BY R. ANDY DEXTER AAS, NRP, LP, EMS-I, FSCEO

COURSE AGENDA

- Program Development
  - Risk Management
  - Laws, Regulations, & Standards
  - SOPs, OGs, Policies
- Roles & Responsibilities
  - Health & Safety Officer (HSO)
  - Incident Safety Officer (ISO)
  - Health & Safety Committee
- Incident & Injury Investigations
  - Near Miss Reporting
  - LODD Investigations
- Exposure Control Program
  - Toxicology
  - Infection Control Program
- Wellness/Fitness Program
  - Incident Rehabilitation Program
  - Medical Physical
  - Physical Fitness Program
  - Mental Resilience Program
- Training & Education

THE DEVELOPMENT OF A PROGRAM

HEALTH AND SAFETY

DETERMINING THE NEED

- The Mission of the Fire Department
- The Values of the Fire Department
- The Culture of the Fire Department
- The most important resource

REGULATIONS

- Occupational Safety and Health Administration
  - General Duty Clause
  - 29 CFR 1910.146 – Permit-Required Confined Space
  - 29 CFR 1910.134 – Respiratory Protection
  - 29 CFR 1910.120 – Hazardous Waste Operations and Emergency Response (HAZWOPER)
  - 29 CFR 1910.156 – Fire Brigades
  - 29 CFR 1910.1030 – Occupational Exposure to Bloodborne Pathogens
  - 29 CFR 1910.1200 – Hazardous Communications

CONSENSUS STANDARD

National Fire Protection Association

- NFPA 1500: *Standard on Fire Department Occupational Safety and Health Program*
  - Adopted in 1987
  - Framework for the development of a comprehensive health and safety program
  - Almost all NFPA standards refer to or are cited in NFPA 1500

Considered a Standard of Care if not adopted into law

NFPA 1906 NFPA 1670 NFPA 1403 NFPA 1994

NFPA 473 NFPA 472 NFPA 101 NFPA 1975 NFPA 1971

NFPA 600 NFPA 1964

NFPA 1002 NFPA 1962

NFPA 1003 NFPA 1961

NFPA 1006 NFPA 1936

NFPA 1021 NFPA 1932

NFPA 1051 NFPA 1931

NFPA 1071 NFPA 1925

NFPA 1221 NFPA 1915

NFPA 1404 NFPA 1914

NFPA 1561 NFPA 1912

NFPA 1500: *Standard on Fire Department Occupational Safety and Health*

NFPA 1581 NFPA 1901

NFPA 1582 NFPA 1521 NFPA 1072 NFPA 1041 NFPA 10

NFPA 1583 NFPA 1999 NFPA 1976 NFPA 1001 NFPA 1977

NFPA 1992 NFPA 1982 NFPA 1991 NFPA 1911

NFPA 1983 NFPA 1981 NFPA 1851

EASTERN AIRLINES FLIGHT 401

PREPARED BY R. ANDY DEXTER AAS, NRP, LP, EMS-I, FSCEO

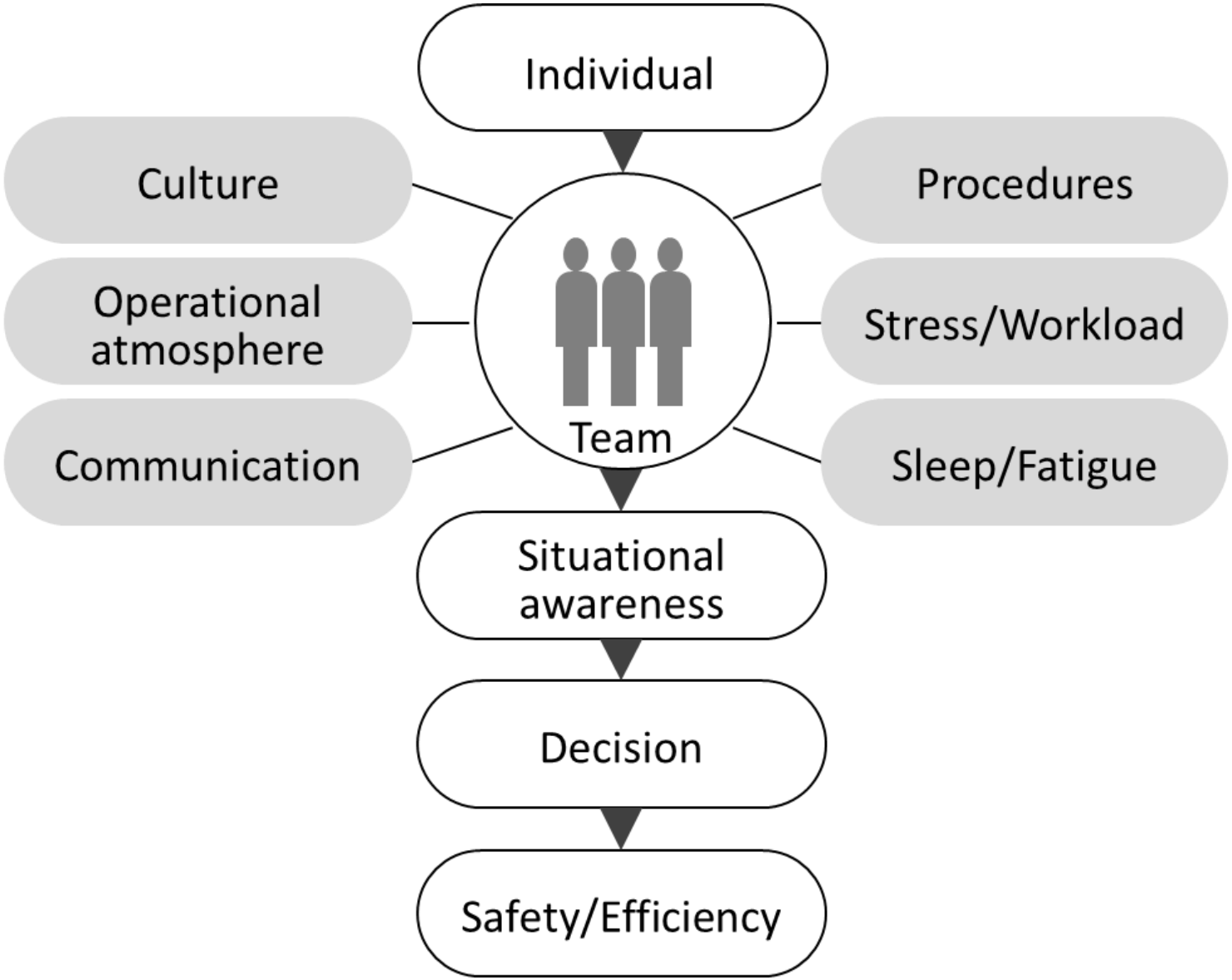
EASTERN AIRLINES FLIGHT 401

Eastern Air Lines Flight 401 was a Lockheed L-1011-1 Tristar jet that crashed into the Florida Everglades at 11:42pm December 29, 1972, causing 101 fatalities. There were 75 survivors. The crash occurred as a result of the entire flight crew becoming preoccupied with a burnt-out landing gear indicator light and failing to notice the autopilot had inadvertently been disconnected. As a result, the aircraft gradually lost altitude and eventually crashed while the flight crew was distracted with the indicator problem. It was the first crash of a wide-body aircraft and at the time, the second deadliest single-aircraft disaster in the United States

"Swiss Cheese" Model of Organizational Failure

CREW RESOURCE MANAGEMENT

- A behavioral modification training system developed by aviation to reduce accident rates
  - Reduce human error = Prevention of Tragedy
  - Twelve Human Factors which contribute to tragedy
    1. Lack of Communications
    2. Complacency
    3. Lack of Knowledge
    4. Distraction
    5. Lack of Teamwork
    6. Fatigue
    7. Lack of Resources
    8. Pressure
    9. Lack of Assertiveness
    10. Stress
    11. Lack of Awareness
    12. Norms


Individual
Culture
Procedures
Operational atmosphere
Stress/Workload
Team
Communication
Sleep/Fatigue
Situational awareness
Decision
Safety/Efficiency

CREW RESOURCE MANAGEMENT

Six-Point Model

- Communication Skills
- Teamwork
- Task Allocation
- Critical Decision Making
- Situational Awareness
- Debriefing

Situational Awareness Loss Factors

- Ambiguity
- Distraction
- Fixation
- Overload
- Complacency
- Improper Procedure
- Unresolved Discrepancy
- “Nobody fighting the fire”

NORMALIZATION OF DEVIANCE

- Term used by the American sociologist Diane Vaughan to describe the process in which deviance from correct or proper behavior becomes normalized in a corporate culture.

- Vaughan defines this as a process where a clearly unsafe practice comes to be considered normal if it does not immediately cause a catastrophe: "a long incubation period [before a final disaster] with early warning signs that were either misinterpreted, ignored or missed completely".

DEPARTMENT DOCUMENTS

Standard Operating Procedures

- A standard operating procedure is a document containing step-by-step instructions to guide employees on how to perform a technical, repetitive process within an organization. Think of it as a playbook for how to get a task done.
- SOPs are written for a set of people who will perform the task

Operational Guidelines

- An operational guideline is a document containing a piece of advice on how to act in a given situation. It is recommended but Not a Mandatory Control.
- OGs are written for a set of people who will perform the task

DEPARTMENT DOCUMENTS

Policy

- Policy is a law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions.

Consensus Standard

- Consensus standards are developed in cooperation with all parties with an interest in participating in the development or use of the standard. To achieve consensus, all views and objections must be considered, and a demonstrated effort must be made toward resolution. Standards are developed from many different sources—trade associations, professional societies, standards producers, consortia, companies and government agencies. Collectively, these different entities are referred to as a Standards Developing Organizations (SDO).

ROLES & RESPONSIBILITIES

HEALTH AND SAFETY

INDIVIDUAL MEMBER

- Empowered
- Trained
- Supervised
- Evaluated

COMPANY OFFICER

Empower

- The individual

Train

- Policies, SOGs, SOPs, OGs
- Safe Work Practices
- Safety Culture

Supervise

Evaluate

NFPA 1021: *Standard for Fire Officer Professional Qualifications*

THE DEPARTMENT

- Empower
  - The individual
- Train
  - Policies, SOGs, SOP, OG
  - Safe Work Practices
  - Safety Culture
- Supervise
- Evaluate

INCIDENT SAFETY OFFICER

- Risk evaluation
- Resource evaluation
- Hazard identification and communication
- Action plan review
- Safety briefings
- Collapse zoning
- Accident investigation
- Postincident Analysis

NFPA 1521: *Standard for Fire Department Officer*

HEALTH & SAFETY OFFICER

Ensure	Ensure safety training and education
Manage	Manage the accident- or loss-prevention program
Investigate	Investigate accidents or incidents
Maintain	Maintain records management and data analysis
Review	Review equipment specifications and assist in acceptance testing
Ensure	Ensure compliancy
Comply	Comply with health-maintenance requirements

NFPA 1521: *Standard for Fire Department Officer*

NFPA 1500: *Standard on Fire Department Occupational Safety and Health*

HEALTH & SAFETY OFFICER

- Serve as internal and external liaison
- Act as infection-control officer
- Develop a critical incident stress management plan
- Conduct postincident analysis
- Address workplace violence
- Leadership advocacy

NFPA 1521: *Standard for Fire Department Officer*

NFPA 1500: *Standard on Fire Department Occupational Safety and Health*

OCCUPATIONAL SAFETY & HEALTH COMMITTEE

- Established committee to evaluate and make recommendations
  - Policies
  - Procedures
  - SOPs, SOGs, OGs
  - Consensus Standards
  - Laws, Ordinances, Statues
  - Review injury/illness, Inspection, and Incident reports
  - Complaints
  - Sources of danger
- Membership
  - Health & Safety Officer
  - Incident Safety Officer
  - Membership Representatives

NFPA 1500: *Standard on Fire Department Occupational Safety and Health*

FIRE CHIEF

- Ultimately Responsible
- Empower
  - The individual
- Develop & Train
  - Policies, SOGs, SOPs, OGs
  - Safe Work Practices
  - Safety Culture
- Supervise
- Evaluate

NFPA 1021: *Standard for Fire Officer Professional Qualifications*

INCIDENT & INJURY INVESTIGATIONS

HEALTH AND SAFETY

INVESTIGATION PURPOSE

- Goal should always be to identify the cause of the situation
- The investigation should identify
  - areas for improvement,
  - needs for training,
  - needs for documentation (SOP, OG, Policy or revision of an existing document)
- Discipline
  - Proper discipline involves functional training
  - Punitive posture should be the last resort and not the priority

NEAR MISS / INJURIES / WORKER'S COMP / LODD

- Documentation Required
  - Regardless of Severity
- Trend Data to create control practices

Uncontrolled Practices

↓

Near Miss

↓

Injuries to Loss of Time Injuries

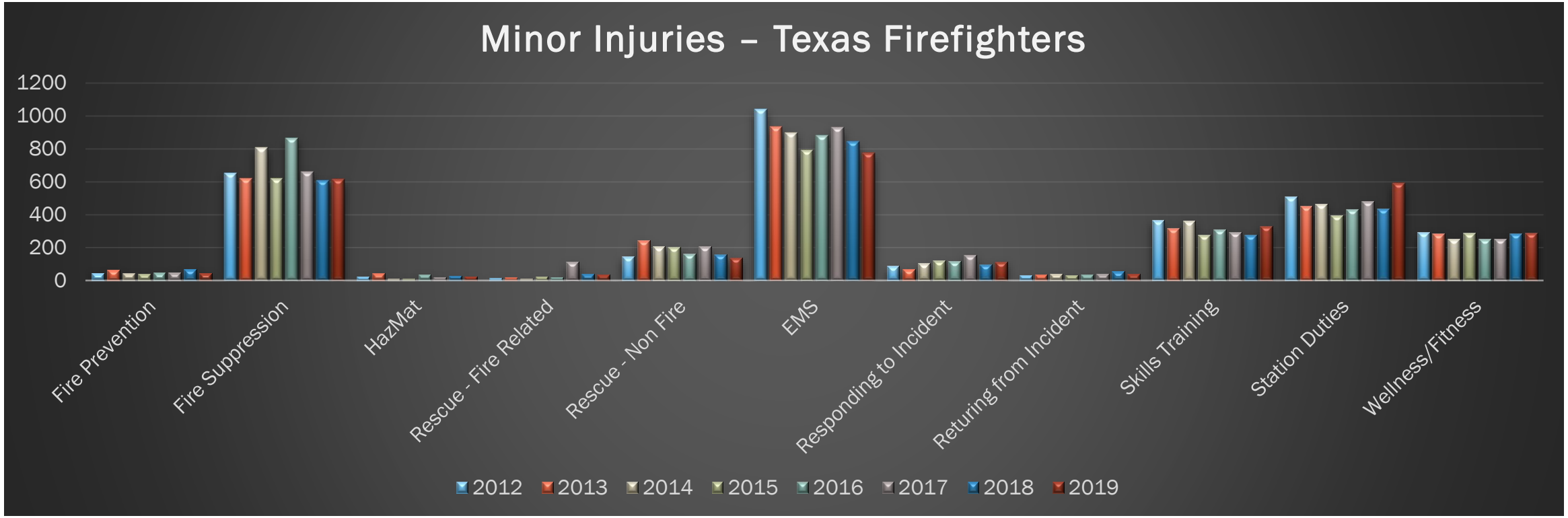
↓

Line of Duty Death

RESOURCES

- Texas Commission on Fire Protection
  - https://www.tcfp.texas.gov/services/injury-reports
- Firefighter Near Miss Reporting
  - http://www.firefighternearmiss.com/
- CDC / NIOSH Firefighter Fatality Investigation and Prevention Program
  - https://www.cdc.gov/niosh/fire/firelink.html
- Firefighter Close Calls
  - https://www.firefighterclosecalls.com/
- Underwriters Laboratories
  - https://ul.org/what-we-do/fire-safety/study-firefighter-line-duty-injuries-and-near-misses-0
- Situational Awareness Matters – Dr. Richard Gassaway
  - https://www.samatters.com/

REPORTED INJURIES FROM TCFP TEXAS ADMINISTRATIVE CODE §435.23



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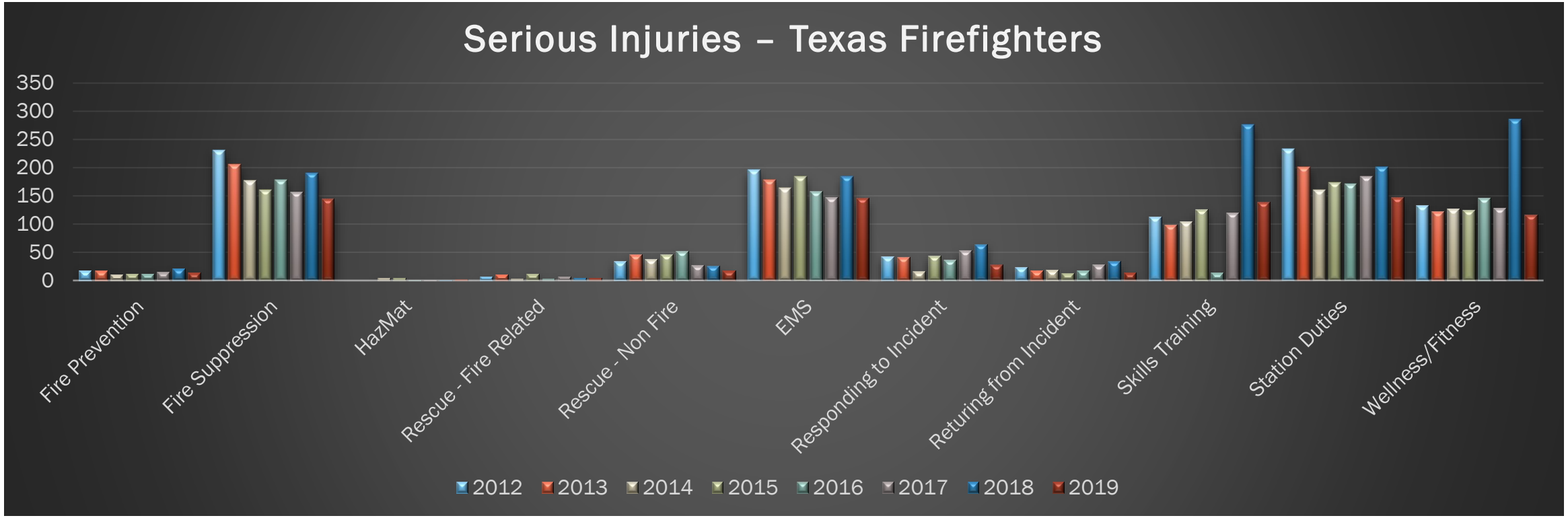

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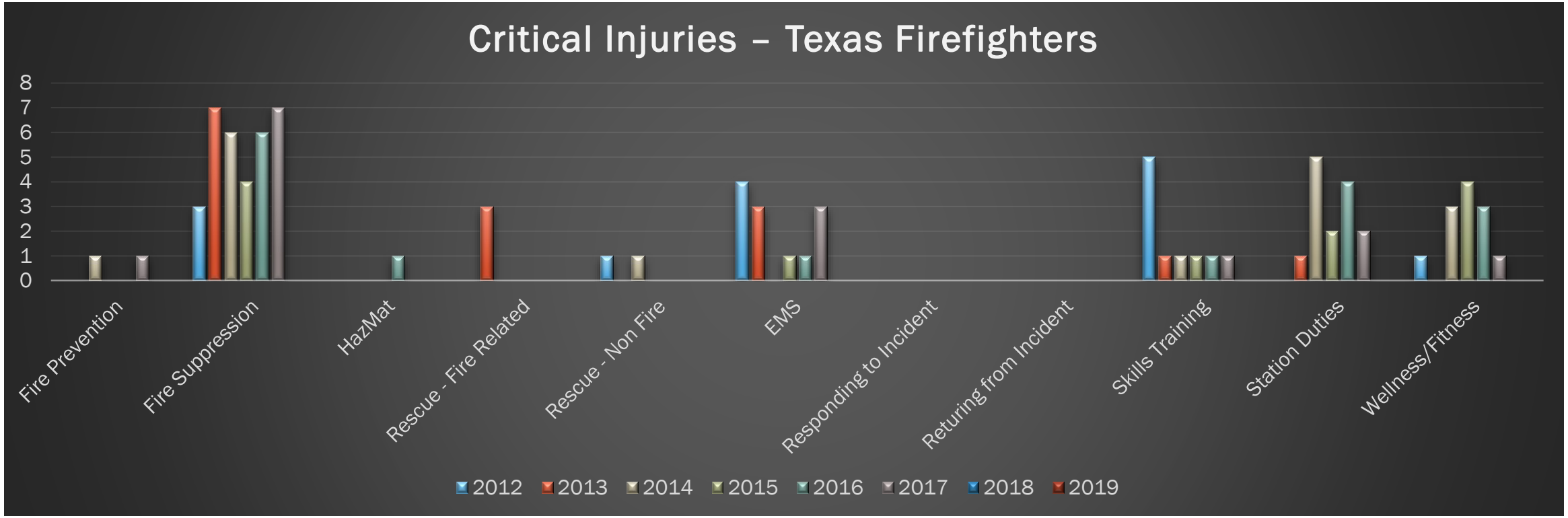

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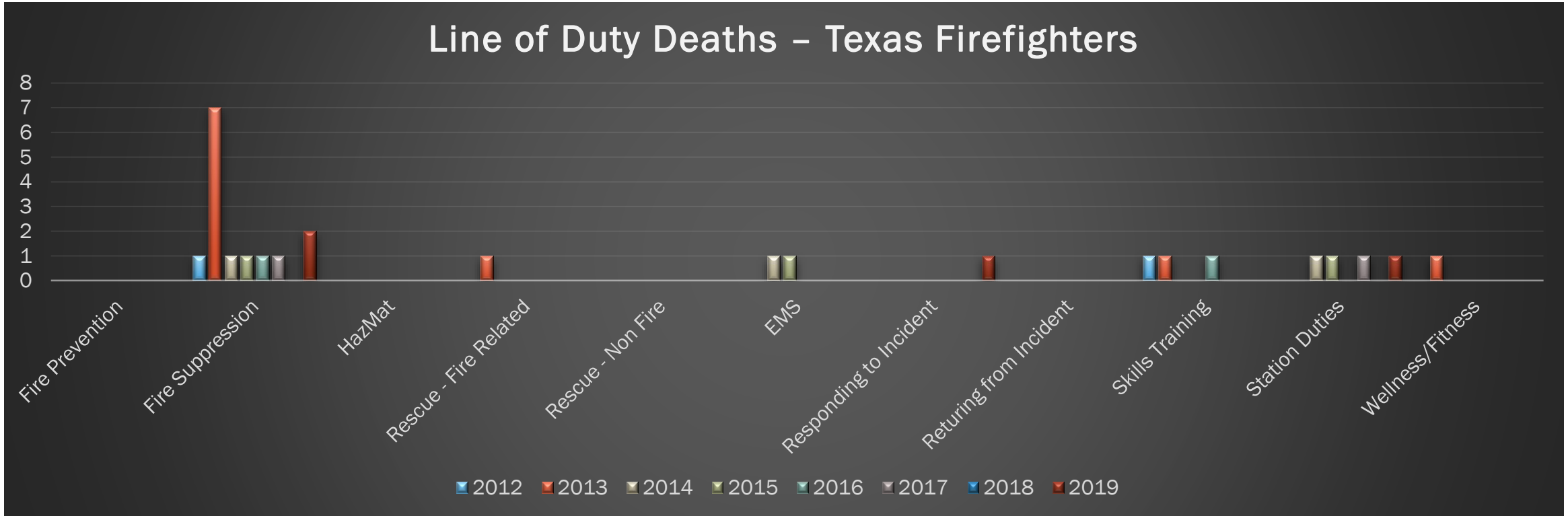


NIOSH & TEXAS FIRE MARSHAL LODD INVESTIGATIONS

- Will visit the incident site to gather information, take pictures, and get measurements.
- Will review documents and records which can include:
  - Department standard operating procedures
  - Dispatch records
  - Training records for the fallen firefighter, incident commander, and officers
  - The fire fighter's medical records
  - Coroner/medical examiner's reports
  - Death certificates
  - Blueprints of the structure
  - Police reports
  - Photos
  - Video

NIOSH & TEXAS FIRE MARSHAL LODD INVESTIGATIONS

- Will interview fire department personnel and firefighters who were on the scene at the time of the incident. Interviews are voluntary and witness statements are not made under oath or reviewed by the witness.
- May work closely with other investigating agencies. The necessary subject matter expertise will be utilized.
- For cases that could be due to respirator or personal protective clothing performance, requests for the equipment or clothing be sent to the NIOSH National Personal Protective Technology Laboratory for evaluation.

ACCIDENT & INCIDENT INVESTIGATIONS

- Objective and Structured
- Used to identify failures in the system
  - Identify problem
  - Identify / Create control practice
  - Educate / Train
  - Evaluate

EXPOSURE CONTROL PROGRAM

HEALTH AND SAFETY

SMOKE

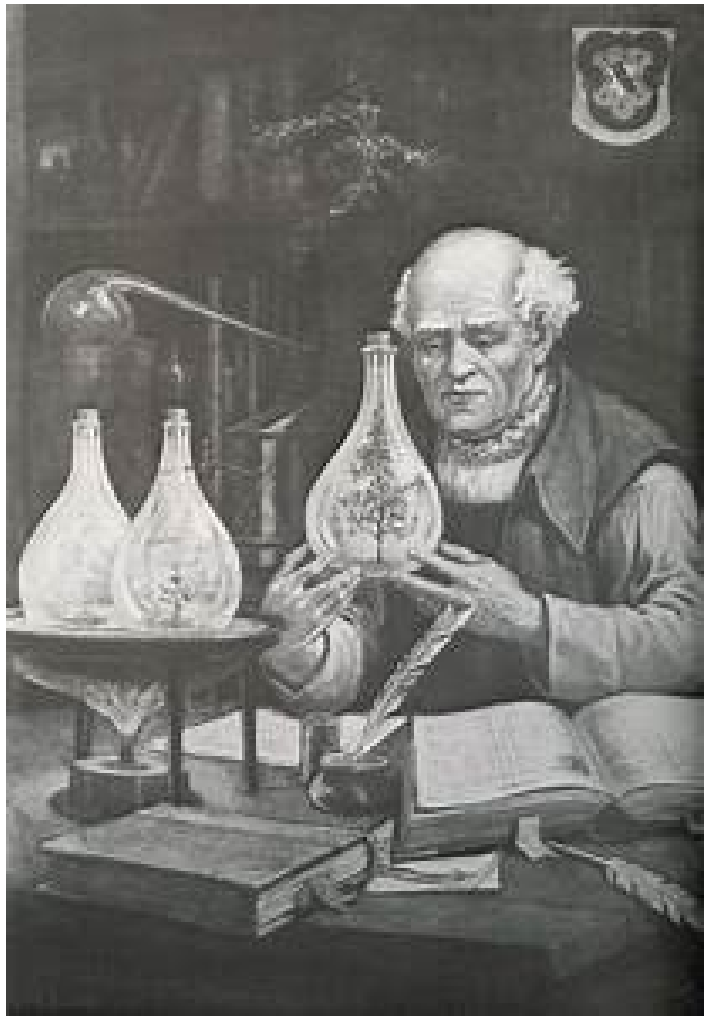
- While firefighters perform a dangerous job, to begin with, the danger doesn't necessarily recede once they've exited the fireground. Research has shown that fires, and particularly house fires, contain known harmful contaminants that play a crucial role in developing cancer. During any given fire, Personal Protective Equipment (PPE) is exposed to a plethora of these carcinogens, which leaves the firefighter vulnerable to skin absorption and/or inhalation following the incident. Moreover, these carcinogens can and will stay active until the turnout gear is properly laundered.

SUN LIGHT

- Firefighters may have a higher risk of skin cancer than the general public, a new study finds.
- The study analyzed information from about 2,400 firefighters in South Florida. Participants answered questions about whether they had past skin-cancer diagnoses, as well as what kind of sun protection (including sunscreen) they used and whether they had been screened for skin cancer or had other skin cancer risk factors (such as sunburns).
- Overall, 109 firefighters (4.5 percent) reported having a diagnosis of skin cancer at some point, including 17, or 0.7 percent, who were diagnosed with melanoma. That's higher than the rate of melanoma among Florida adults in the general population, which is only 0.01 percent, the researchers said. (Melanoma is the deadliest form of skin cancer.)
- What's more, firefighters tended to be diagnosed with melanoma at younger ages than adults in the general population: The median age of melanoma diagnosis was 42 years old among firefighters, compared with 64 years old in the general U.S. population.

TOXICOLOGY

- Toxicology
  - Toxicology is a field of science that helps us understand the harmful effects that chemicals, substances, or situations, can have on people, animals, and the environment.
  - The dose makes the Poison (Paracelsus)
    - “All substances are poisons; there are none which is not a poison. The right dose differentiates a poison and a remedy.”

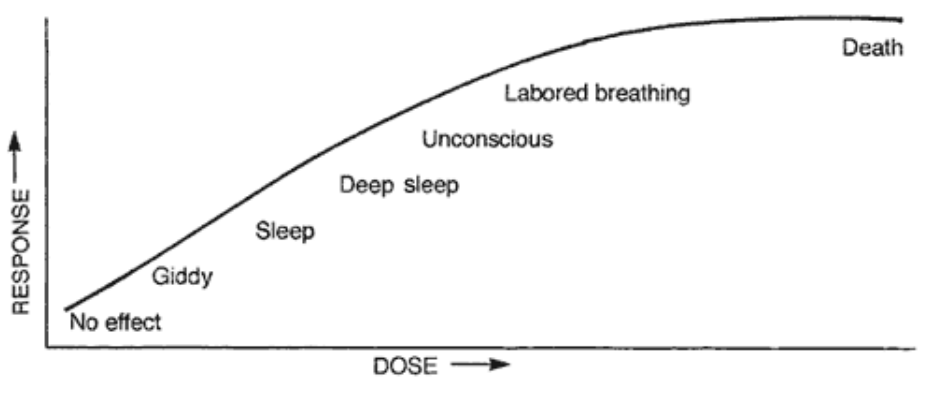


Paracelsus
(c. 1493–1541), Swiss physician

THE DOSE

- The dose of a chemical or physical agent is the amount of that agent that comes into contact with a living organism or some part of a living organism.
  - Dose really represents the amount of agent per unit of body weight.
  - A heavier person may require a greater dose to achieve the same effect that a lesser dose would have on a lighter person.
- The time course and duration of the dose administration or exposure are important variables
  - A single large dose given all at once is likely to have quite a different impact than the same total dose given in small amounts over a long period of time.
- Effects are also dependent upon
  - Age
  - Gender
  - Underlying disease
  - Nutritional status
  - History of pervious illness

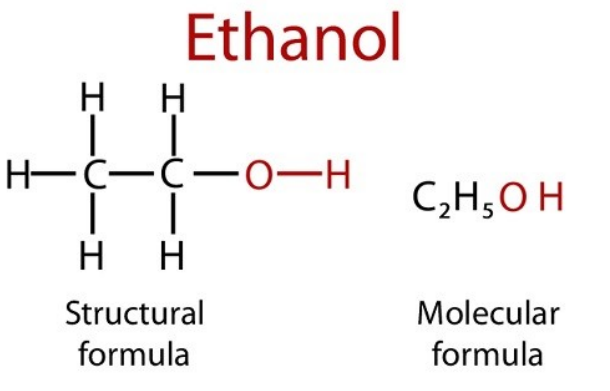
VARIABLES WHICH MUST BE TAKEN INTO CONSIDERATION IN MAKING A FULL DETERMINATION OF THE CONSEQUENCES OF THE DOSE:



- Dose Amount
- Dose Frequency
- Dose Duration
- Subject Variability (Natural)
  - Age
  - Gender
  - Body Weight
  - Ethnic background
  - Genetics

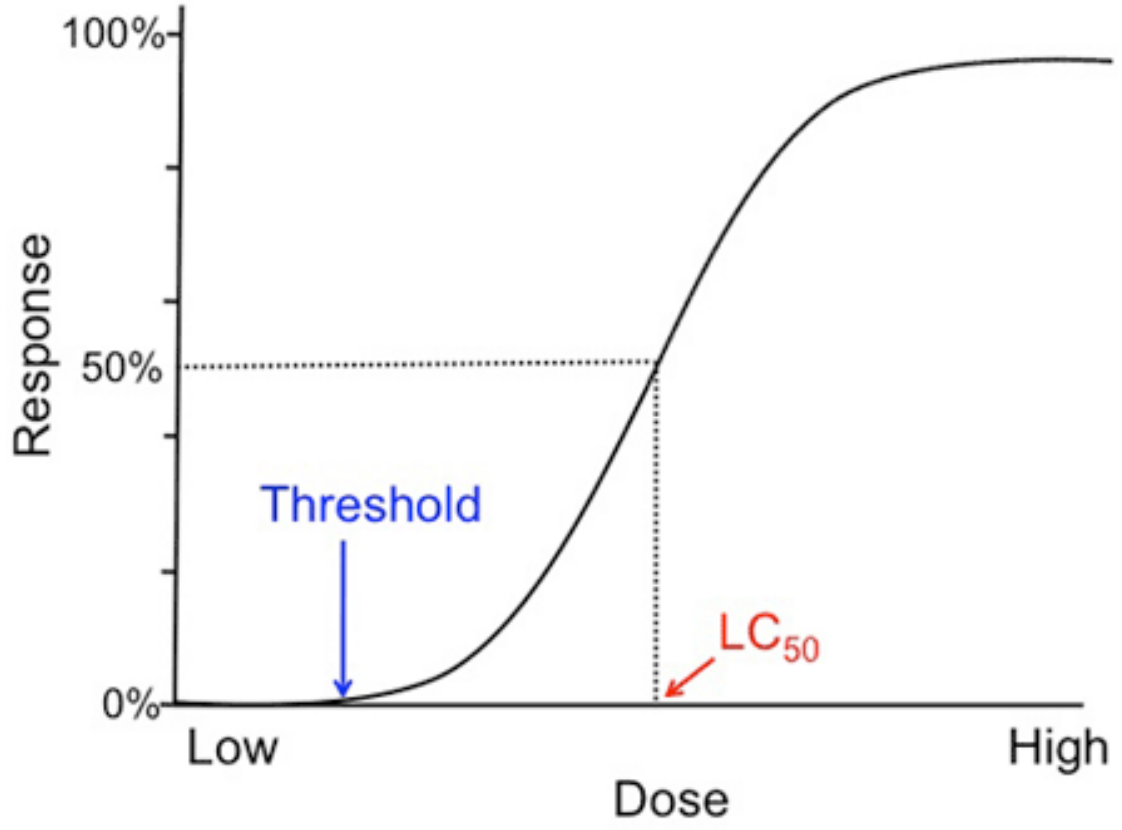
- Subject (Health Status)
  - Pre-Existing Health Conditions which may affect the susceptibility to an agent
- Rout of Exposure
  - Ingestion
  - Inhalation
  - Absorption
  - Injection
- The toxicity of an agent does not depend on its source (synthetic or naturally occurring).

DOSE & EFFECT



.02-.03	Slight euphoria & loss of shyness, mild relaxation. No loss of co-ordination.
.04-.06	Feeling of well-being, relaxation, lower inhibitions. Euphoria.
.07-.09	Continuing euphoria. Some impairment of balance, speech, vision, reaction time. Reduced judgement, caution & self control.
.10-.12	Loss of good judgement. Significant impairment of motor co-ordination. Slurred Speech. Euphoria.
.13-.15	Lack of physical control, gross motor impairment. Increasing dysphoria (anxiety & restlessness). Severly impaired judgement.
.16-.19	Dysphoria, confusion. Possible nausea.
.20	May need help to stand or walk. Possible loss of memory, nausea & vomiting.
.25	Severe impairment of mental, physical & sensory function.
.30	Stupor. Possible loss of consciousness.
.40	Onset of coma. Possible death due to respiratory arrest.

DOSE & EFFECT



- Target tissue, target organs, or generically as target site
  - Example – nervous tissue is a target site for pesticides
  - Toxicants can affect structures inside the cell or processes in the cell.
- Mean Lethal Dose:
  - LD_{50} (lethal dose, 50%)
  - LC_{50} (lethal concentration, 50%)
- Acute (or short-term)
- Chronic (or long-term)

Substance		Non-toxic or beneficial dose	Toxic dose	Lethal dose
Alcohol		0.05%	0.1% *(Ethanol blood levels)*	0.5%
Carbon monoxide		< 10%	20-30% *(% Hemoglobin bound)*	> 60%
Secobarbital (sleep aid)		0.1 mg/dL	0.7 mg/dL *(Blood levels)*	> 1 mg/dL
Aspirin		0.65 g *(2 tablets)*	9.75 g *(30 tablets)* *(Acute Oral Dose)*	34 g *(105 tablets)*
Ibuprofen		400 mg *(2 tablets)*	1,400 mg *(7 tablets)* *(Acute Oral Dose)*	12,000 mg *(60 tablets)*

LONG TERM/CUMULATIVE DOSE EFFECTS

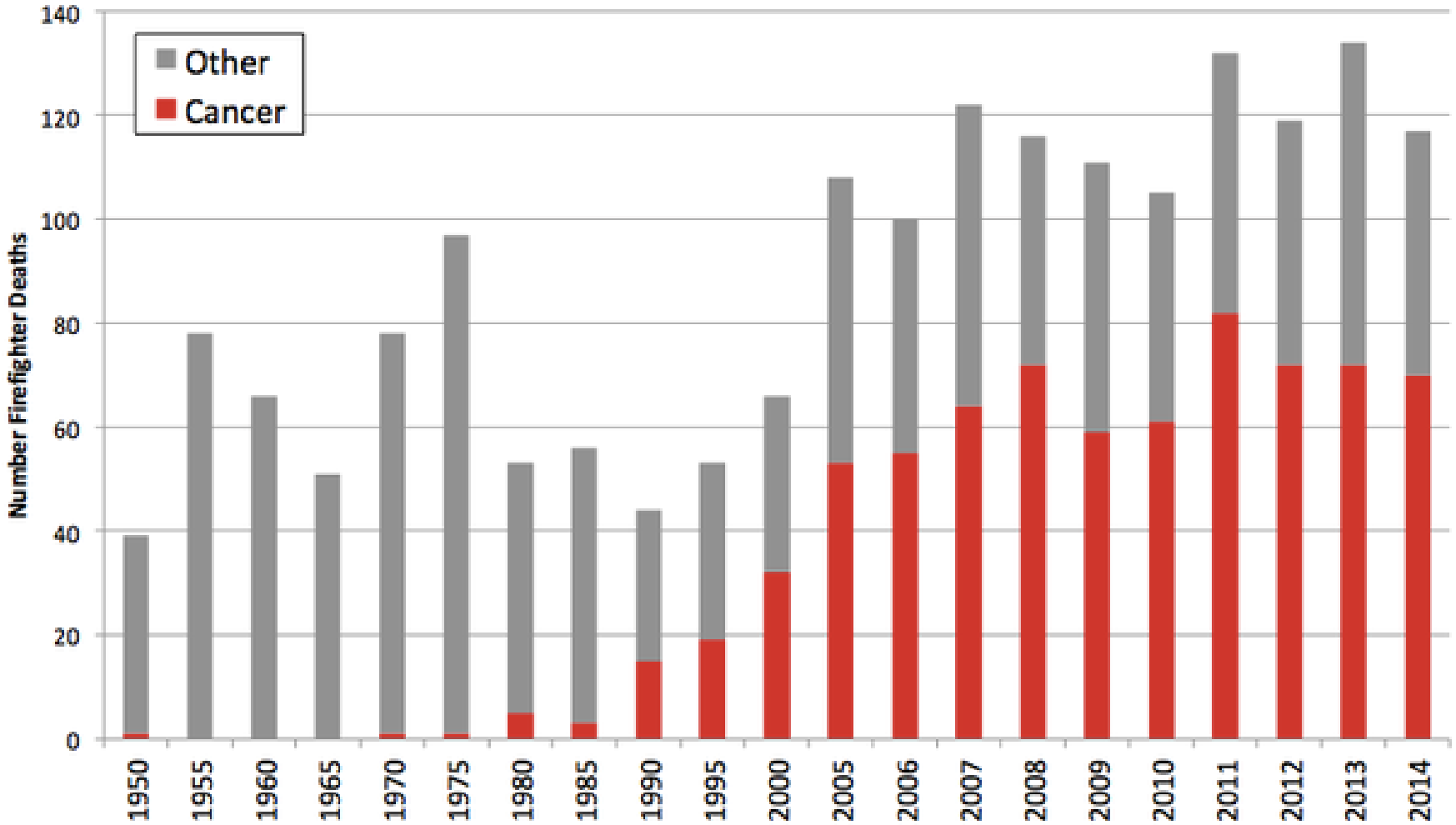
- Cumulative Exposure:
  - The total amount of a substance or radiation that a person is exposed to over time. Cumulative exposure to a harmful substance or radiation may increase the risk of certain diseases or conditions.
  - Cumulative exposure is a term used in the insurance industry that relates to situations where damages have been sustained over time, such as in the case of gradual exposure to pollutants or other sources of illness.
  - Cumulative exposure can make it difficult to determine whether the insurance company is at fault for damages, since the timing and source of the exposure is often unclear.

STATISTICS

- Firefighter are at a 9% greater risk of being diagnosed with cancer than people who are not firefighters

- Firefighters have a 14% higher risk of dying from cancer than the general US population.

RISE IN FIREFIGHTER CANCER DEATHS SINCE



CONDITIONS FOR ABSORPTION

- Firefighters are prone to absorb the contaminants as heat increases the chance of absorption.
- For every five degrees the average body heat reaches, there's a 400% increase in skin absorption
  - Groin absorbs 300% more
  - Jaw absorbs 93% more
  - Forehead absorbs 43% more
  - Back absorbs 12% more

WHAT CAN WE DO TO PROTECT OURSELVES

Always wear your PPE and SCBA on fires (structure, vehicle or any other fire where applicable), including during overhaul.

Prior to leaving the fire scene, perform a gross decontamination to remove potentially toxic contaminates from your turnouts and gear.

Rinse and wipe off hands, arms, face, neck, etc. immediately after the fire.

After the fire, store turnout gear in a compartment OUTSIDE of the passenger cab to avoid unnecessarily inhaling off-gassing carcinogens.

WHAT CAN WE DO TO PROTECT OURSELVES

- If available, a second (clean) set of turnouts should be used upon returning to the station, and the contaminated turnouts should be thoroughly cleaned. If a second set of turnouts is not available and/or thoroughly cleaning turnouts is not an immediate option, care should be taken to clean as much of the contaminates off as possible, and turnouts should be hung in a well-ventilated area away from crew or apparatus passenger compartment until proper cleaning is possible.
- After returning to the station and outfitting your equipment, crew members should thoroughly shower to remove carcinogens from skin and hair, and then they should change into clean cloths

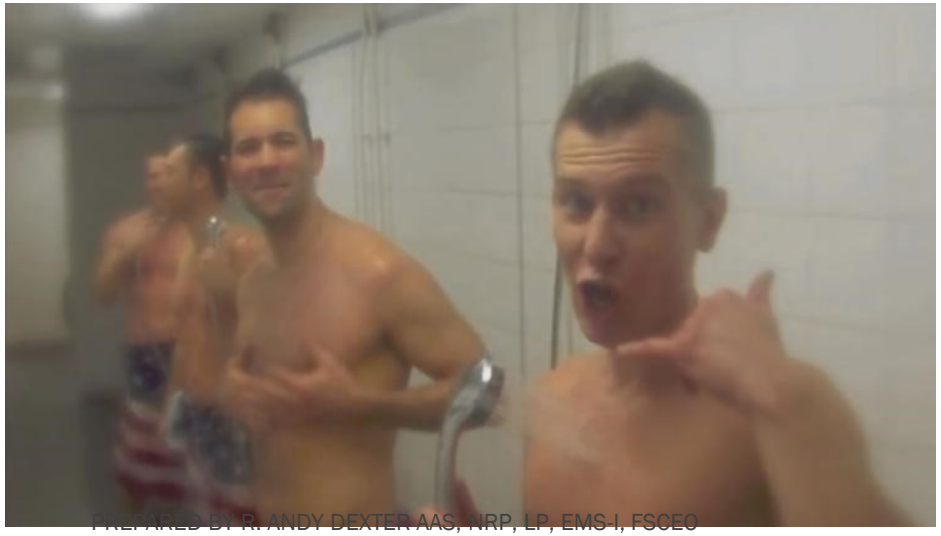
WHAT CAN WE DO TO PROTECT OURSELVES

- Immediately clean contaminated clothing and gear at the station. Do not throw your contaminated clothing on your bed or in your locker where it will contaminate your bedding, other clothing or off-gas in the crew quarters. Do NOT take contaminated materials, clothing or gear home where you will further expose yourself and your family to the carcinogens from the fire.
- Do not wear or bring turnouts (dirty or clean) into living or sleeping areas. The days of stowing bunker pants next to the bed should be a thing of the past as the practice contaminates the living space and exposes crew members to off-gassing toxins while they sleep.

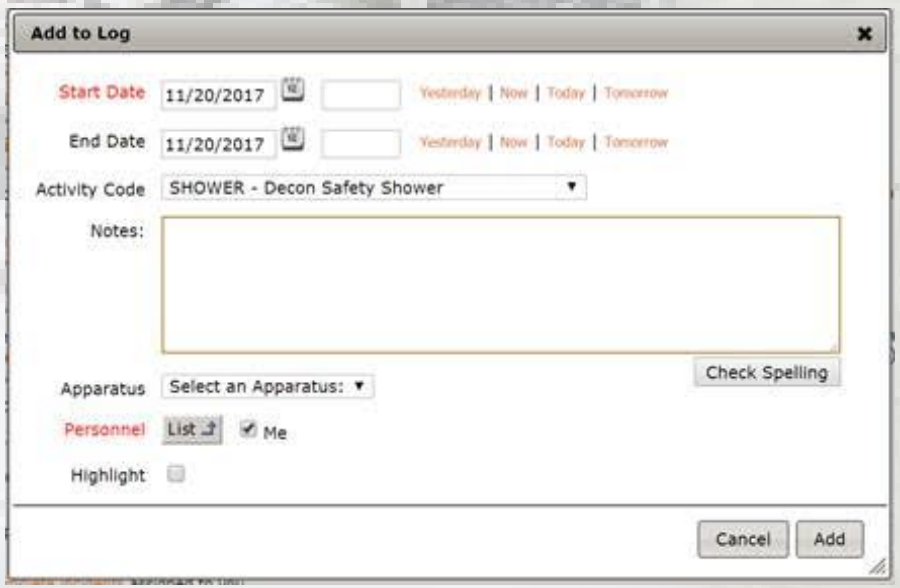
WHAT CAN WE DO TO PROTECT OURSELVES

- Document your exposures in either a PERS (Personal Exposure Reporting System) or a personal binder. At minimum, keep track of the date and time, run ID #, crew present, exposure or materials burning, duration of exposure, etc. Even though many departments are accepting a “presumptive” illness claim with cancer, we often have to “prove” we were exposed at work.

MANDATORY SHOWERS WITH DOCUMENTATION



DOCUMENTATION THE EXPOSURE



DECONTAMINATE

SCBA and Cylinders

Wear glove during decontamination of SCBA, Mask, and Cylinders

Filling SCBA Cylinders at Cascade

Tools and Equipment

All tools which entered the Hazard Area:

- Radios
- Flashlights

Hoses

Use roller and gloves to handle contaminated hoses

Decon before reloading

DECONTAMINATE

Apparatus Interior

Detail the interior, riding seats, equipment, mics, etc.

Bunker Gear

Must be trained/certified to wash bunker gear.

Uniform

Wash Uniform or clothing warn during the incident response.

Change into fresh/clean clothing post shower

FIRE GROUND DECONTAMINATION PROCESS

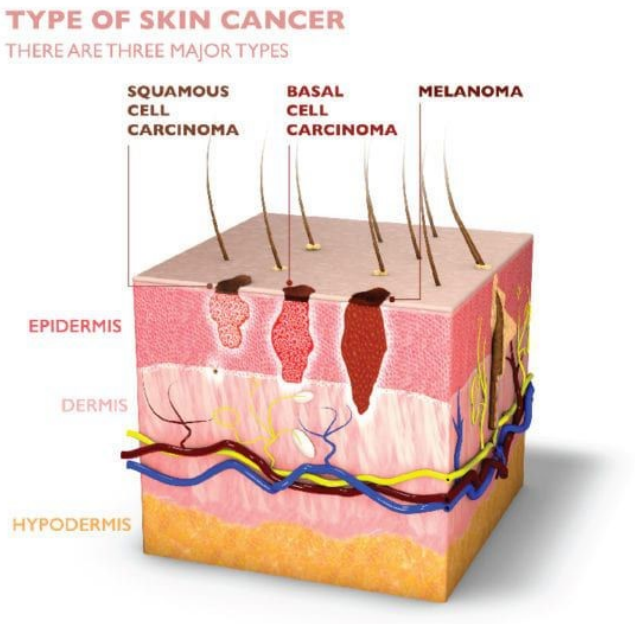
- A designated area for the cleaning is marked with cones and located away from the fire or "hot zone," which may be at a training or a structure fire. Equipment used in the process includes clean garbage bags, a 15-inch garden hose and nozzle, a 1-and-a-half-inch hose adapter, spray bottle with a teaspoon of Dawn dish soap, a small soft-bristled brush and car wash brush.
  - It's a two-person process. The firefighter with the least air in their self-contained breathing apparatus is cleaned first.
  - The firefighter is hosed off with low pressure water to remove bulk contaminants, while avoiding direct water contact with gear near the neck and wrist.
  - With the spray bottle, the firefighter's gear including helmet, gloves and boots will be sprayed with the solution and then brushed down.
  - The rinse process continues until the soap is gone.
  - Repeat the process for the other firefighter.
  - Both firefighters can then disconnect from air supply and place gear into a sealed container for transport.
- Wipes are also necessary to clean off remaining contaminants such as hands, neck and face. They cannot contain aloe, alcohol or lotion as they open up pores, allowing for contamination.

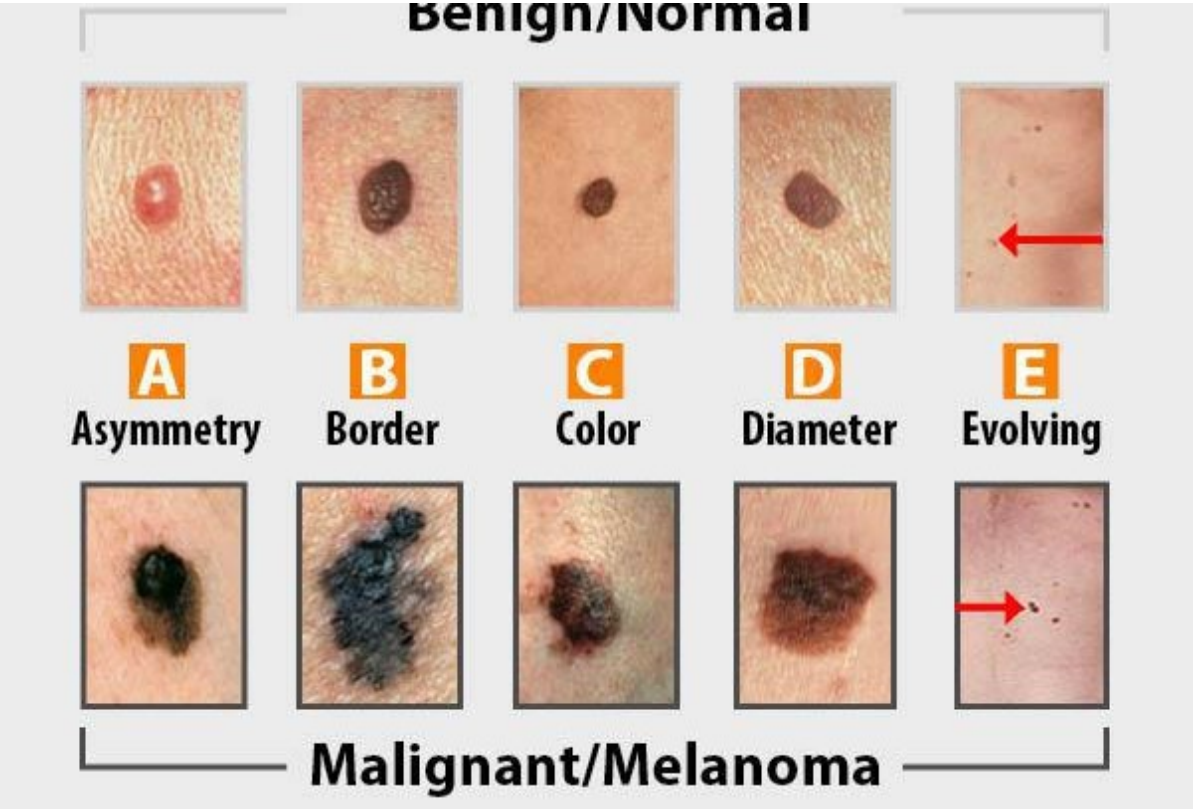
WASH YOUR GEAR

A DIRTY HOOD IS A CANCER RISK

- Face and Neck are areas of dermal exposure
- Hoods are potential carriers of harmful fire products
- Hoods are in direct contact with the skin
- Wash your hoods after every fire

SKIN CANCER


TYPE OF SKIN CANCER
THERE ARE THREE MAJOR TYPES
SQUAMOUS CELL CARCINOMA
BASAL CELL CARCINOMA
MELANOMA
EPIDERMIS
DERMIS
HYPODERMIS


Benign/Normal
A
Asymmetry
B
Border
C
Color
D
Diameter
E
Evolving
Malignant/Melanoma

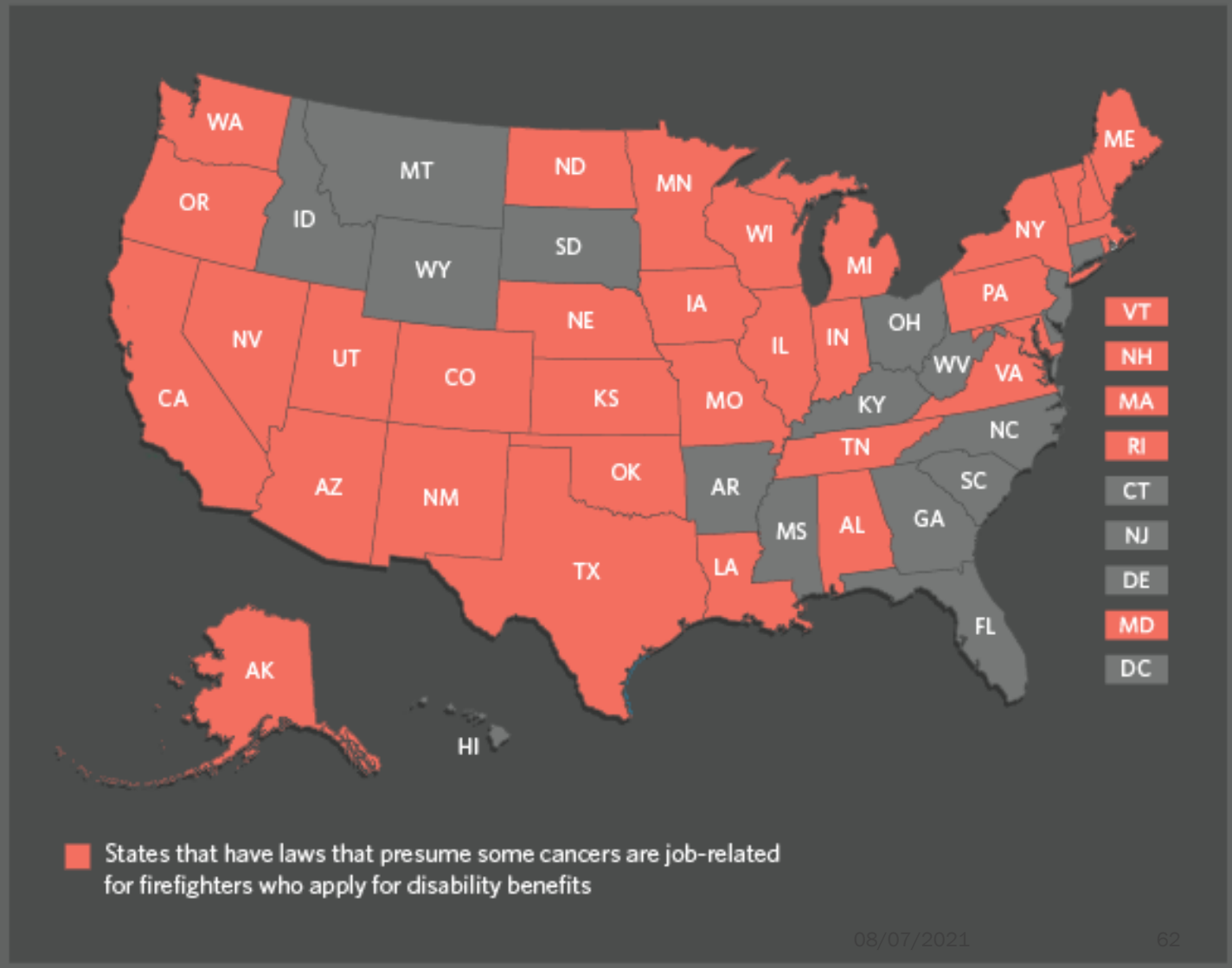
WHAT CAN I DO TO REDUCE MY RISK OF SKIN CANCER?

- Most skin cancers are caused by too much exposure to ultraviolet (UV) rays. UV rays come from the sun, tanning beds, and sunlamps. UV rays can damage skin cells.
- To lower your risk of getting skin cancer, you can protect your skin from UV rays from the sun and from artificial sources like tanning beds and sunlamps.
- Protection from UV rays is important all year, not just during the summer. UV rays can reach you on cloudy and cool days, and they reflect off of surfaces like water, cement, sand, and snow. In the continental United States, UV rays are strongest from 10 a.m. to 4 p.m. daylight saving time (9 a.m. to 3 p.m. standard time).
- The UV Indexforecasts the strength of UV rays each day. If the UV index is 3 or higher in your area, protect your skin from too much exposure to the sun. CDC recommends easy ways to protect your skin when the UV index is 3 or higher—
  - Stay in the shade.
  - Wear clothing that covers your arms and legs.
  - Wear a hat with a wide brim to shade your face, head, ears, and neck.
  - Wear sunglasses that wrap around and block both UVA and UVB rays.
  - Use a broad spectrum sunscreen with a sun protection factor (SPF) of 15 or higher.

UPDATED SUPPORT

Firefighter Cancer Laws

At least 33 states have some type of law that presumes certain types of cancer are a job-related illness for firefighters who apply for disability benefits. Arkansas has a law that provides death benefits to the family, but only if it is recommended by a state-appointed review panel.



TEXAS LAW

- Senate Bill 2551, which became Texas law in June 2019, is made to help firefighters get worker's compensation if they are diagnosed with a specific type of cancer. This is a revision from a state law passed in 2005.
- "There are a number of differences between the old law and the new law. Before, there was a question about what types of cancers would be covered or not covered."
- Under SB 2551, eleven cancers are covered:
  - Stomach
  - Colon
  - Rectum
  - Skin
  - Prostate
  - Testes
  - Brain
  - Non-Hodgkin's Lymphoma
  - Multiple Myeloma
  - Malignant Melanoma
  - Renal Cell Carcinoma

In order to be eligible under SB 2551, a firefighter must:

- Be diagnosed during employment
- Be a firefighter for at least five years
- Be free of cancer when they started the job
- Respond regularly to fire, radiation or carcinogenic calls
- Not smoke, and not be married to a smoker.

Government Code, Title 6. Public Officers and Employees, Subchapter A. Provisions Generally Applicable to Public Officers and Employees, Chapter 607. Benefits to Certain Disease and Illnesses, Subchapter A. Contagious Diseases, Section 607.055 Cancer

OTHER CANCER SUPPORT/RESOURCES

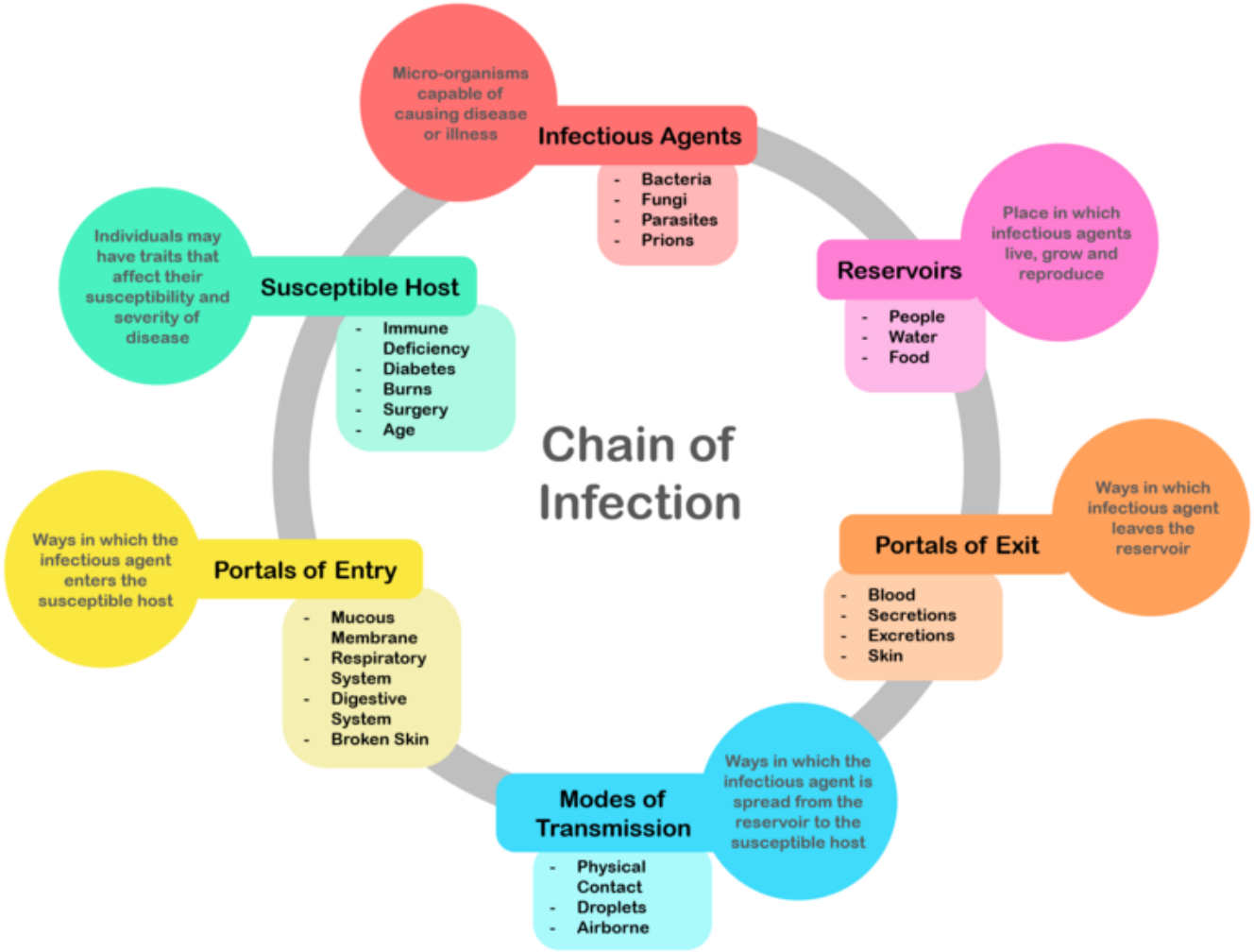
- Firefighter Cancer Support Network (FCSN)
  - FCSN seeks to help firefighters/EMS professionals and their families cope with cancer. It is our goal to provide occupational-cancer awareness and prevention training nationwide. Together, we can educate, support, and make a difference.
  - https://firefightercancersupport.org/

- First Responder Center for Excellence (FRCE)
  - https://www.firstrespondercenter.org/cancer/

- National Firefighter Registry
  - https://www.cdc.gov/niosh/firefighters/registry.html

INFECTIOUS CONTROL

- Creation and Maintenance of a Program
- Identification of an Infectious Control Officer
- Training
  - Initial
  - Annual
- Control Practices and Equipment
- Reporting Process
  - 24 Hours



NFPA 1581: *Standard for Fire Department Infection Control Program*

OSHA 29 CFR 1910.1030 – Occupational Exposure to Bloodborne Pathogens

BLOODBORNE PATHOGENS

Table 4. Risk of infection and required post-exposure prophylaxis for the three most commonly transmitted pathogens

Pathogen	Infection risk after needlestick*	Post-exposure prophylaxis (PEP)	
		What to do?	When to act?
Human immunodeficiency virus (HIV)	0.3%	A four-week course of a combination of either two or three antiretroviral drugs determined on a case-by-case basis	As quickly as possible, preferably within hours
Hepatitis B virus (HBV)	Approximately 0% with PEP; 6% to 30% without PEP	HBIG† alone or in combination with vaccine (if not previously vaccinated)	Preferably within 24 hours, no later than seven days
Hepatitis C virus (HCV)	1.8%	No recommendation	N/A

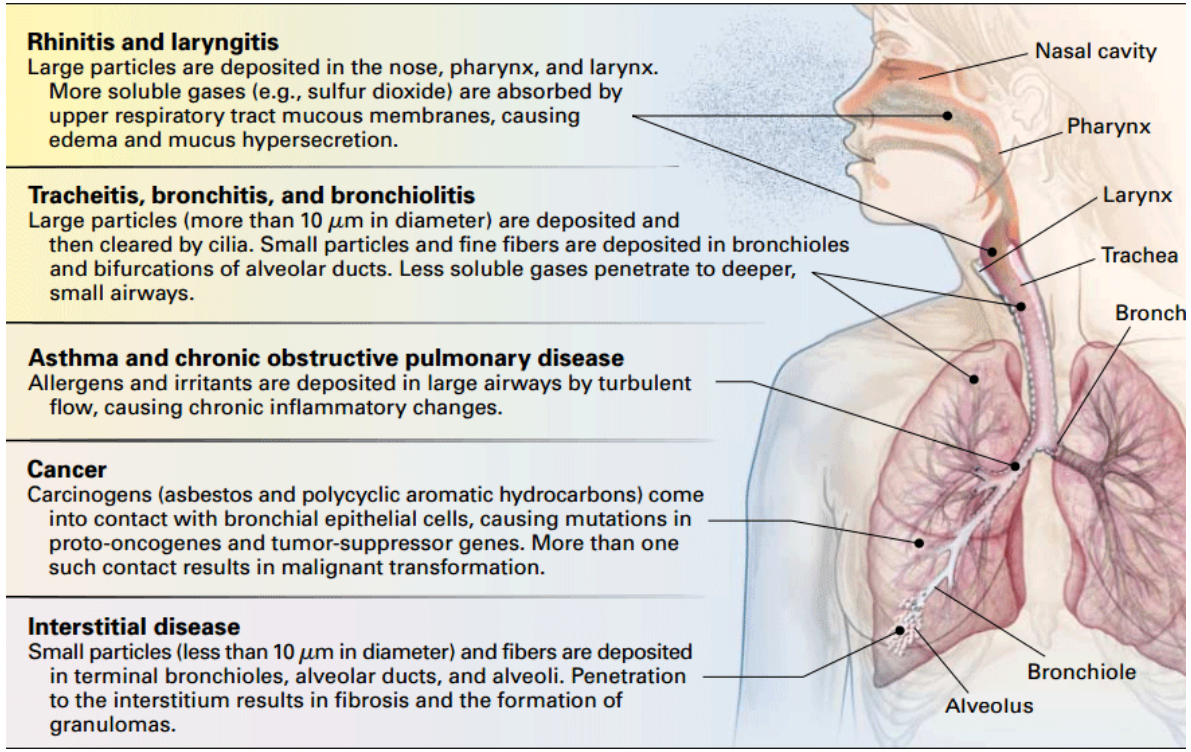
*After needlestick injury from a known positive patient source
†HBIG=Hepatitis B immune globulin

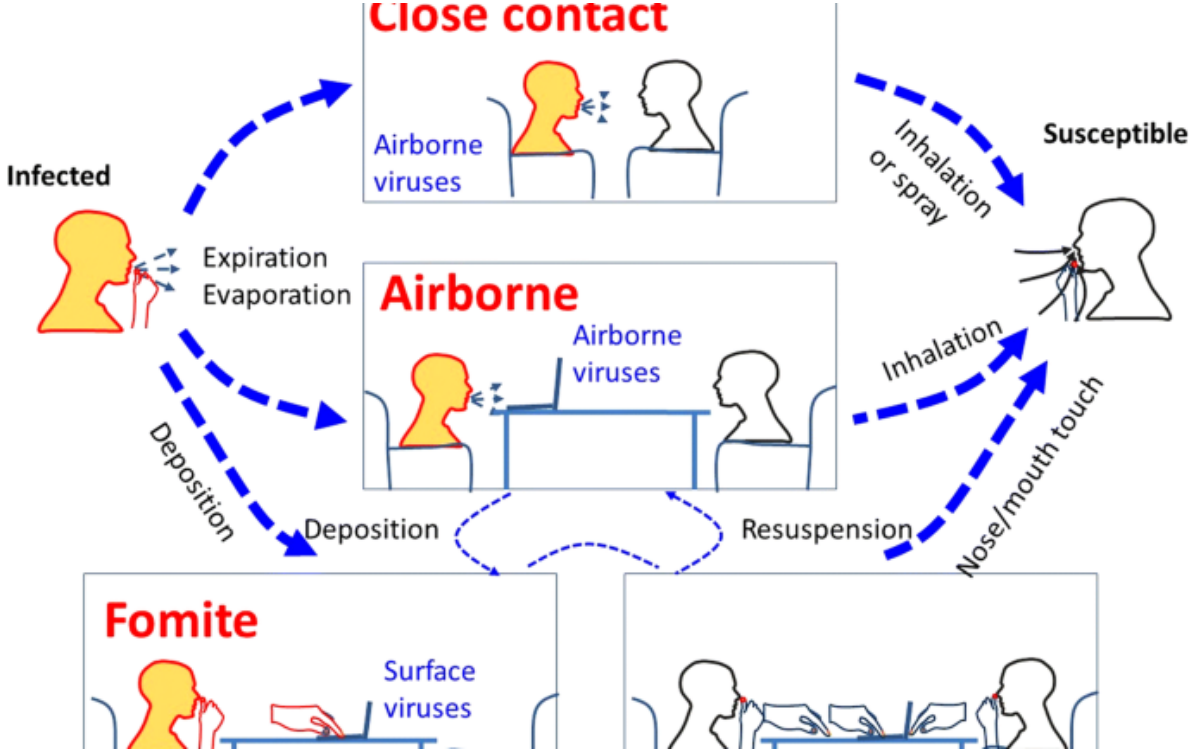
Source: Adapted from Exposure to blood: What healthcare personnel need to know. *Centers for Disease Control and Prevention website. Available at: www.cdc.gov/ncidod/dhqp/pdf/bbp/Exp_to_Blood.pdf.*

Table 1. Potentially Infectious Body Fluids

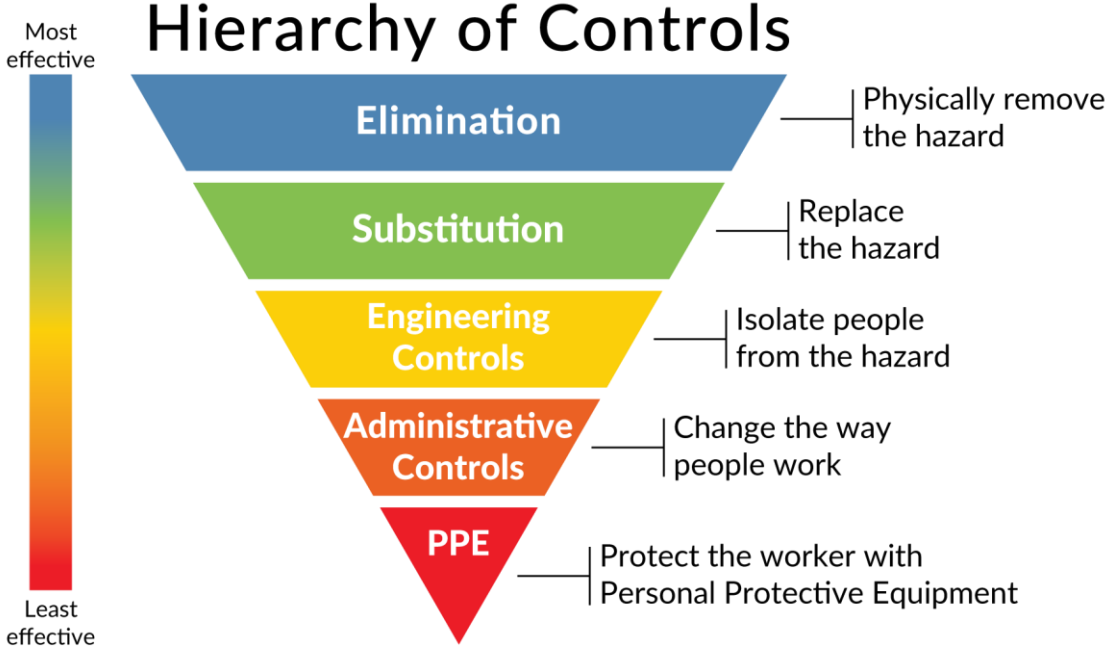
Potentially Infectious	Not Considered Infectious*
Blood	Feces
Tissue	Nasal secretions
Semen	Saliva
Vaginal secretions	Sputum
Visibly bloody body fluids	Sweat
Cerebrospinal fluid	Tears
Synovial fluid	Urine
Pleural fluid	Vomit
Peritoneal fluid	
Pericardial fluid	
Amniotic fluid	

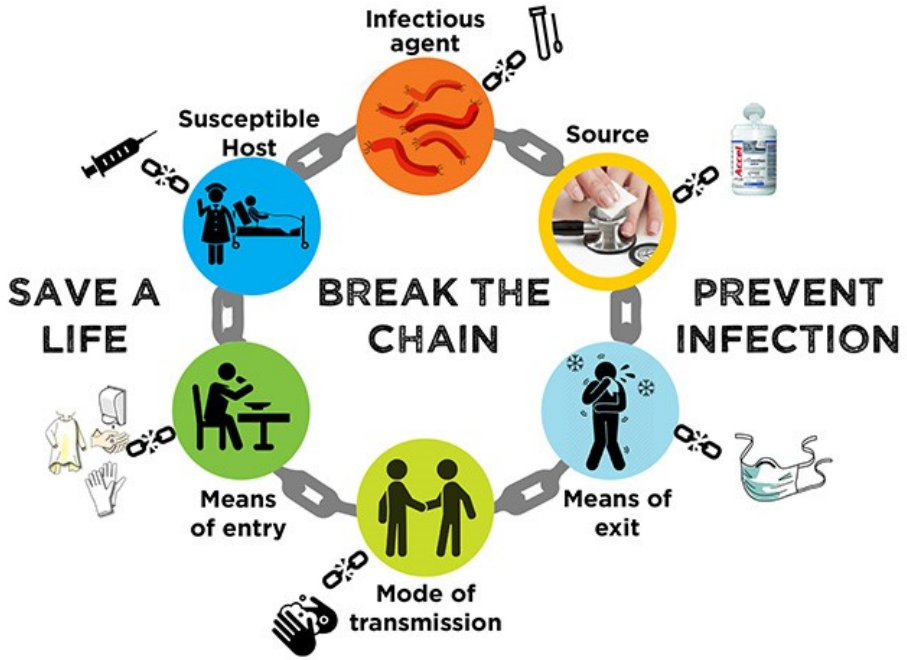
* *Unless visibly bloody. Source: References 3, 7.*





RESPIRATORY BORNE PATHOGENS





ELEMENTS OF INFECTION/EXPOSURE CONTROL PROGRAM

DOCUMENTATION REQUIREMENT (CONFIDENTIAL PERSONNEL FILE)

Record Number	Record Title	Record Description	Retention Period	Remarks
GR1050-22c	MEDICAL AND EXPOSURE REPORTS	Environmental, biological, and material safety monitoring reports concerning toxic substances and harmful physical agents in the workplace, including analyses derived from such reports.	30 years.	By regulation - 29 CFR 1910.1020(d)(1)(ii). See Local Schedule PW 5450-01 for Asbestos Management Records.

- Exposure Incident Report
- Any Associated Investigation
- OHSA Sharps Injury Log
- Letter of Determination for Associated Exposure Investigation

ANNUAL REQUIREMENTS

- Training on Exposure/Infection Control for all personnel
- Review of Policies, SOPs, OGs
- Complete an annual report on incidents encountered
- Implement control methods and practices

WELLNESS & FITNESS PROGRAM

HEALTH AND SAFETY

PRE-EMPLOYMENT PHYSICAL OR SCREENINGS

- Need
- Components
  - Physical Exam with Physician
  - Audiogram
  - Pulmonary Function Test
  - Body Composition
  - 12 Lead ECG
  - Vision Screening
  - Chest X-Ray
  - Blood Work
  - Urine Analysis and Drug Screen
  - Tuberculosis (PPD) Skin Test

NFPA 1582: Comprehensive Occupational Medical Program for Fire Departments

PRE-EMPLOYMENT PHYSICAL OR SCREENINGS

- Physician sends a report to the department
  - TIER 1 – Fit for Duty: Fit for full firefighting duties.
  - TIER 2 – Fit for Duty: Some decline in health parameters, however fit for full firefighting duties.
  - TIER 3 – Clear for Duty: Recommend restrictions in firefighting activities.
  - TIER 4 – Unfit for Duty: Not recommended for firefighting duties.
- Confidential
- Detailed report to applicant
- No cost to member

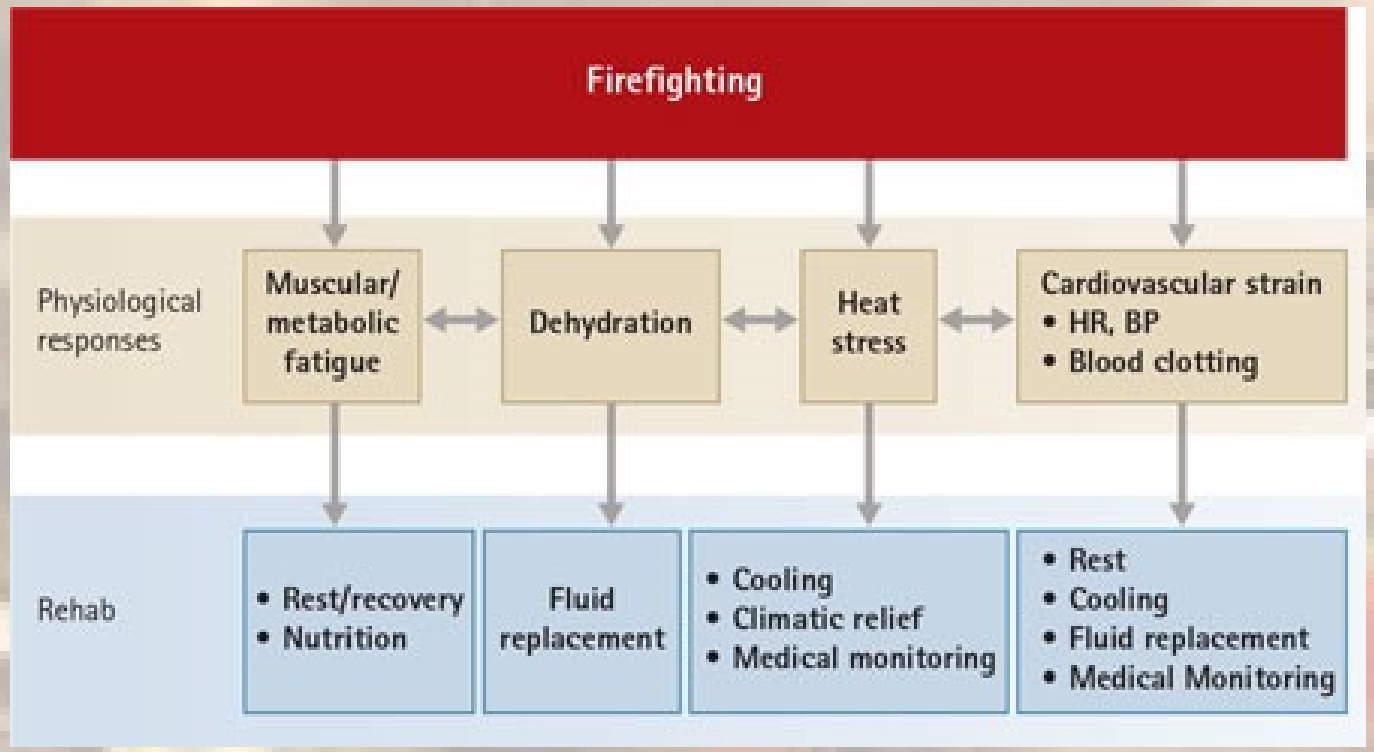
NFPA 1582: Comprehensive Occupational Medical Program for Fire Departments

ON-GOING PHYSICALS

- Important for maintaining a viable workforce
- Confidential
- Physician sends a report to the department
  - **TIER 1 – Fit for Duty:** Fit for full firefighting duties.
  - **TIER 2 – Fit for Duty:** Some decline in health parameters, however fit for full firefighting duties.
  - **TIER 3 – Clear for Duty:** Recommend restrictions in firefighting activities.
  - **TIER 4 – Unfit for Duty:** Not recommended for firefighting duties.
- Detailed report to member

NFPA 1500: *Standard on Fire Department Occupational Safety and Health*

MEDICAL MONITORING / REHAB



- For Training and Incidents
- Prevention of injuries / illnesses
- Consists of:
  - Rehydration
  - Active and/or passive cooling
  - Medical Evaluation
    - Blood Pressure
    - Pulse Rate
    - Respiratory Rate
    - Carboxyhemoglobin levels
  - Air Monitoring

NFPA 1584: Recommended Practices on the Rehabilitation of Members Operating at Incident Scene Operations and Training Exercises

RESPIRATORY PROTECTION / FIT TESTING

- Creation and Maintenance of a Program
- Physical Exam with OSHA Questionnaire
- Fit Testing of Mask Types
  - Full Face
  - Half Face
  - N95 Respirator
- Training
  - Initial
  - Continuing Education

OSHA 29 CFR 1910.134 – Respiratory Protection

NFPA 1404: Fire Service Respiratory Protection

SAFETY PRACTICES

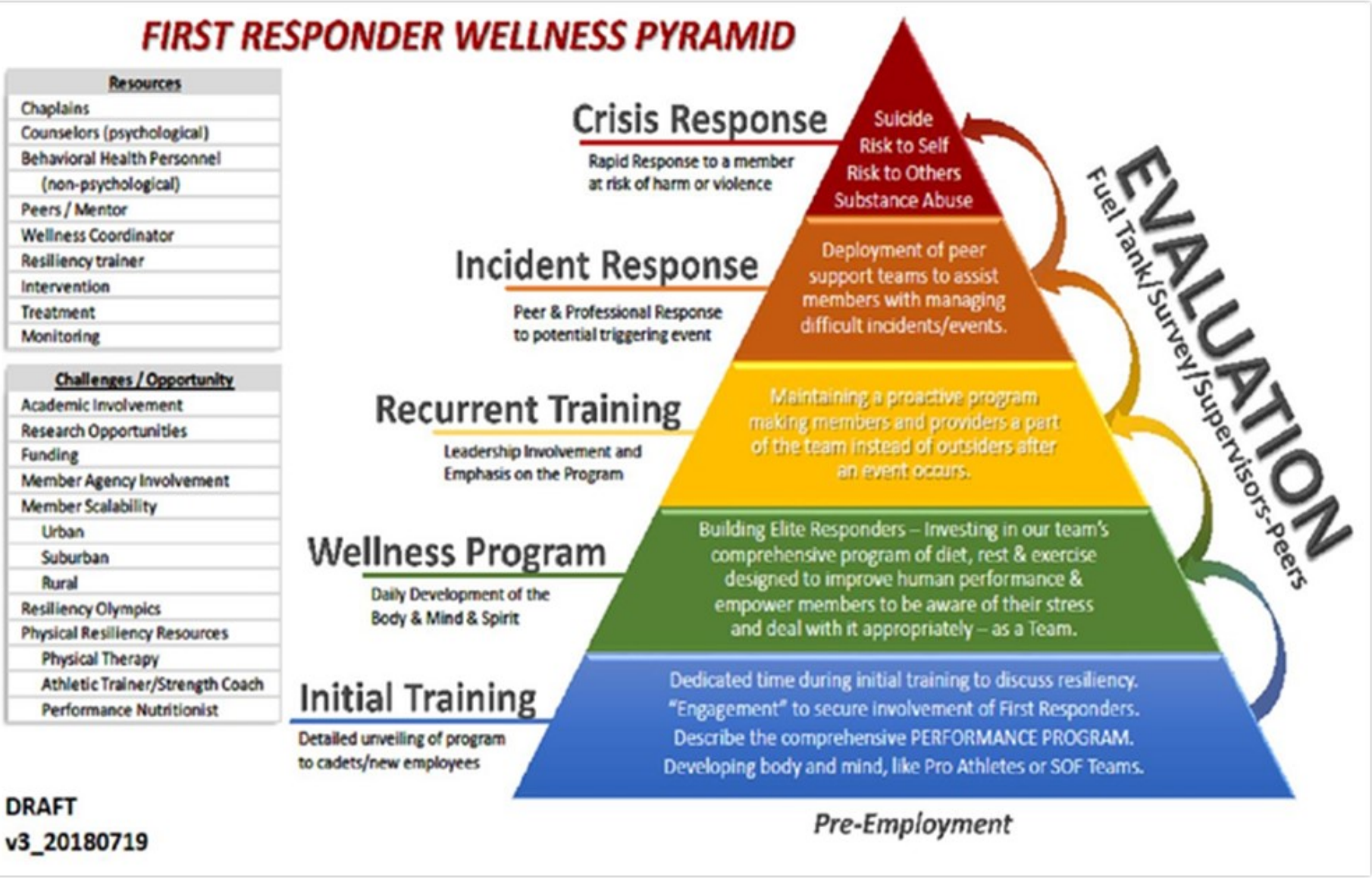
- Facility Safety
  - General Housekeeping
  - Storage Practices
  - Slips / Trips / Falls
  - Utilities
  - Functionality of Systems
  - Emergency
    - Power
    - Lighting
    - Fire Extinguishers
    - Alarm Systems
    - Sprinkler Systems
- Tactical Safety
  - Command Function
  - Part of the IAP
  - Accountability
  - Rapid Intervention Teams
  - Structural Stability
  - Fire Progression
  - Evaluation of Tactics employed
- STOP / ALTER / SUPPEND

WELLNESS & FITNESS INITIATIVE

- Fitness Components
  - Flexibility
  - Cardiovascular Fitness
  - Muscular Fitness
  - Body Composition
- Wellness Components
  - Nutrition
  - Back Care
  - Heart & Lung Disease
  - Physiological Stress Recognition and Control

NFPA 1583: *Standard on Health-Related Fitness Programs for Fire Fighters*

FIRST RESPONDER WELLNESS PYRAMID



CRITICAL INCIDENT STRESS PLAN

- Possible Indications
  - Mass Causality
  - Injuries/Fatalities involving coworkers
  - Suicides
  - Injuries/Fatalities involving family members
  - Violence directed to coworkers
  - Death of a Civilian / Child
  - Excessive media attention
- Signs & Symptoms
  - Difficulty in concentrating
  - Short-term memory
  - Obsessive / Compulsive
  - Loss of mental flexibility
  - Isolation / Withdrawal
  - Abuse
    - Sex
    - Drugs
    - Alcohol
    - Etc.

EMPLOYEE ASSISTANCE PROGRAM

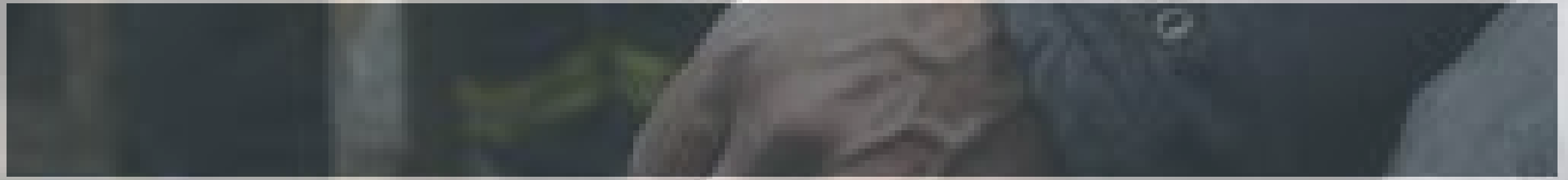
- Member and Family have Access
- Composed of
  - Counseling Services
    - Mental
    - Marital / Relationship / Family
    - Financial
  - Smoking Cessation
  - Substance Abuse

NATIONAL RESOURCES AVAILABLE

- National Suicide Prevention Lifeline
  - 1-800-273-TALK (8255)
  - www.PocketPeer.org
- SAMHSA's National Helpline
  - Substance Abuse and Mental Health Administration
  - 1-800-662-HELP (4357)
  - https://www.samhsa.gov/find-help/national-helpline
- Crisis Text Line
  - Text HOME to 741741 to reach a Crisis Counselor
  - https://www.crisistextline.org/text-us/
- UNC School of Medicine
  - https://heroeshealth.unc.edu/
  - Download the app for COVID-19 Mental Health Resources
- Firefighter Behavioral Health Alliance
  - https://www.ffbha.org/
  - Director of Professional Health
  - Online Self-Assessment Tool
  - National Fire Service Suicide Reporting System

TRAINING & EDUCATION

HEALTH AND SAFETY

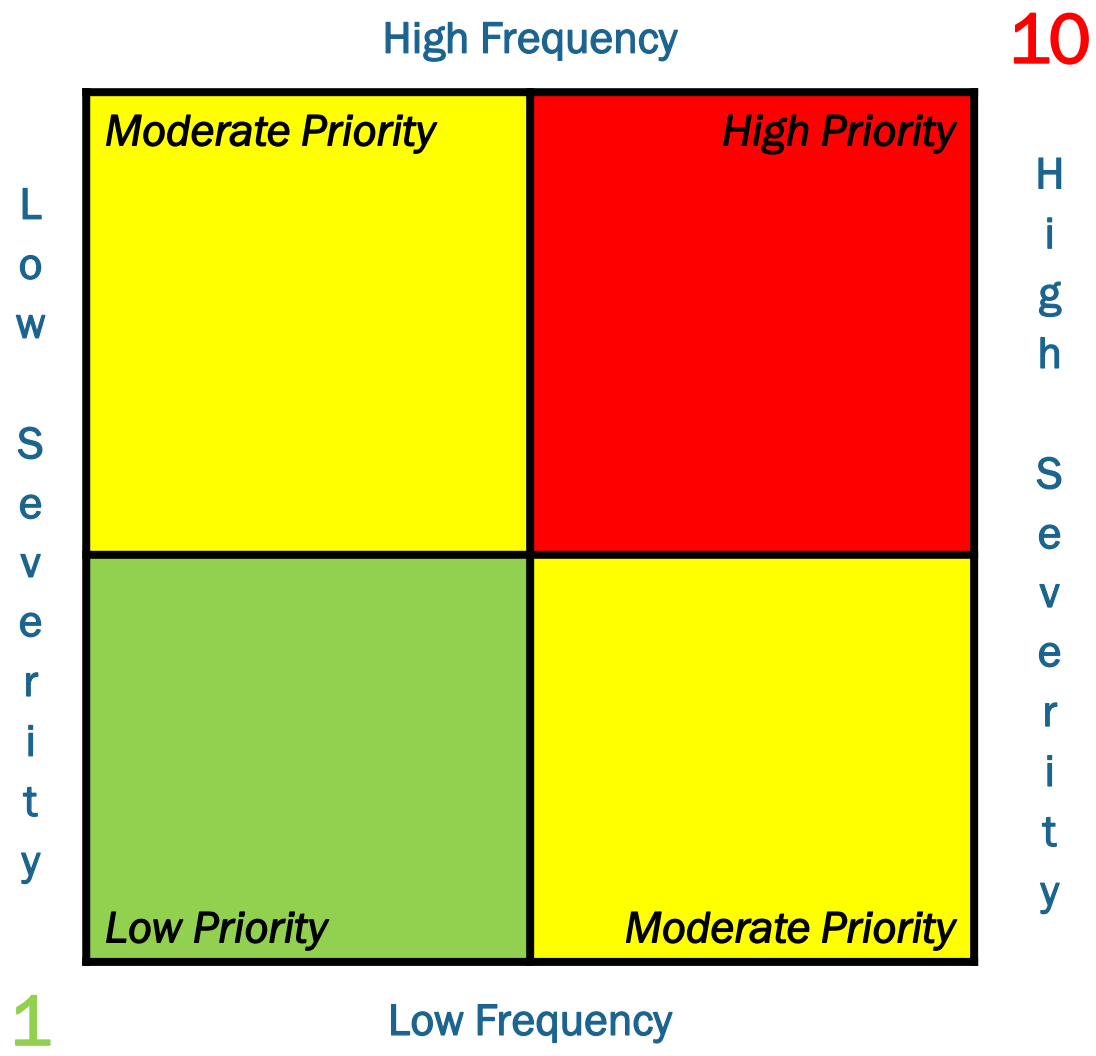


INITIAL TRAINING / PERFORMANCE STANDARDS

- NFPA 1403 requirements
- Certification
  - Firefighter I
  - Firefighter II
- Cardiopulmonary Resuscitation
- First Aid
- Body Substance Isolation / Bloodborne Pathogens
- NIMS

RISK MANAGEMENT PLAN ANALYSIS

- Risk Identification
- Risk Evaluation
  - Frequency
  - Severity
- Risk Prioritization



RISK VS. FREQUENCY

- Risk-Control
  - Risk Avoidance
  - Risk Transfer
  - Control Measures
  - Plan Implementation
- Monitorship
- Evaluation
- Revision

COURSE CONCLUSION

HEALTH AND SAFETY

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