



The Gold Standard



THE SKELLEFTEA MODEL

Fire Fighting...



Is this our Culture?



If you knew something bad was happening, would you stop it?



The most respected



Forbes Magazine May 2022

Scientists, farmers and doctors – 83%

Firefighters and teachers – 82%

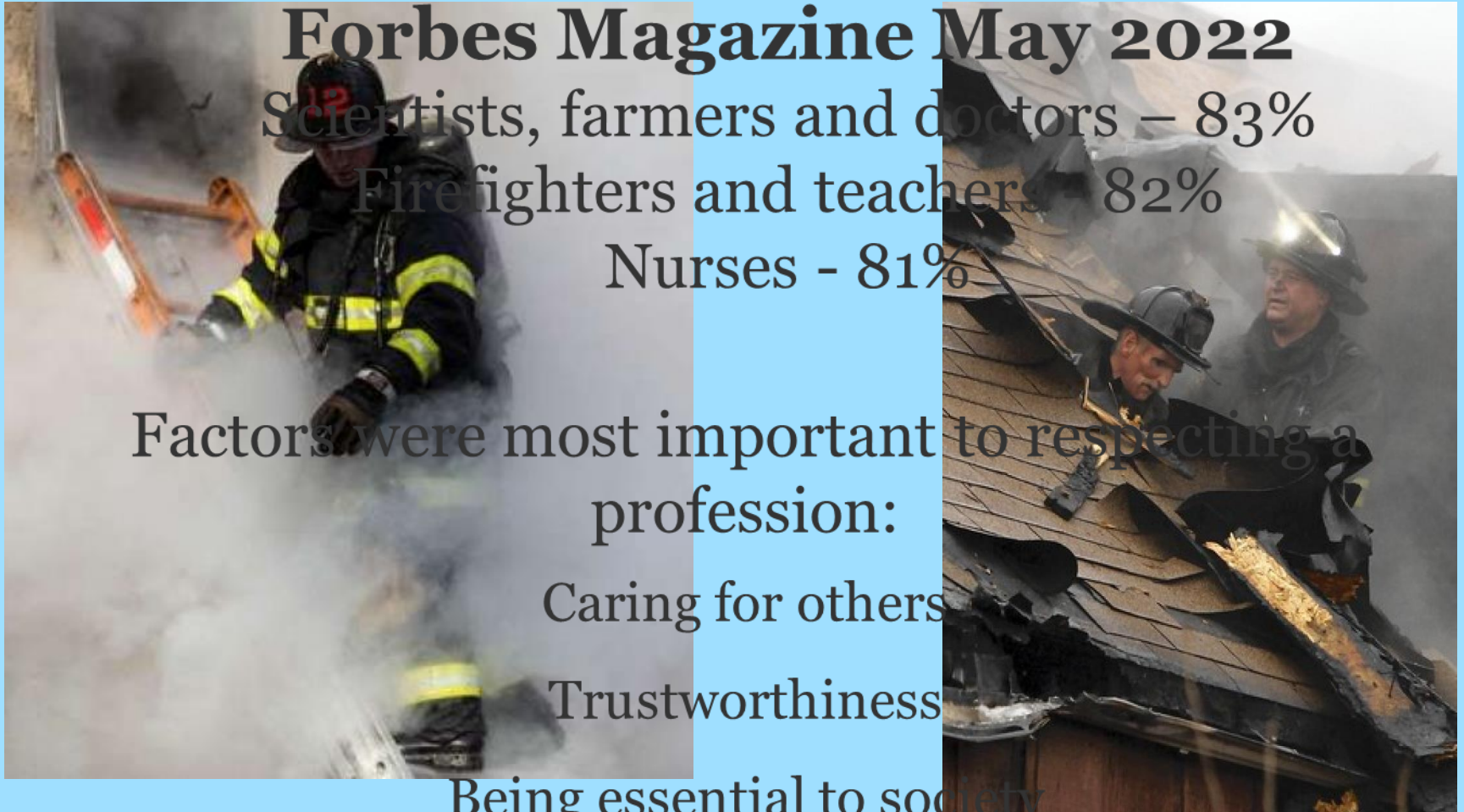
Nurses – 81%

Factors were most important to respecting a profession:

Caring for others

Trustworthiness

Being essential to society



CANCER STUDIES



ILLINOIS
FIRE SERVICE
INSTITUTE



U.S. Fire
Administration


U₁



Cancer Type	Examples of substances or processes
Bladder	Aluminum production, rubber industry, leather industry, textile industry, prolonged exposure to benzene compounds in burning debris and soot.
Brain	Formaldehyde, benzene, vinyl chloride, acrylonitrile (AKA-Vinyl cyanide)
Colon	Asbestos, PAH's, acrylonitrile , and formaldehyde
Larynx	Asbestos, isopropyl alcohol, wood dust
Liver	Arsenic, acrylonitrile
Leukemia	Benzene, soot, PAH's, vinyl chloride, acrylonitrile , formaldehyde
Lymphatic & Hematopoietic	Benzene, ethylene oxide, herbicides, radiation

Cancer Type	Examples of substances or processes
Lung	Arsenic, asbestos, beryllium, cadmium, coke oven fumes, chromium compounds, coal gasification, nickel refining, foundry substances, radon, soot, tars, silica, vinyl chloride, diesel exhaust
Mesothelioma	Asbestos
Nasal Cavity and Sinuses	Formaldehyde, isopropyl alcohol manufacture, mustard gas, nickel refining, leather dust, wood dust
Pharynx	Formaldehyde, mustard gas
Skin	Arsenic, coal tars, mineral oils, sunlight
Soft Tissue Sarcoma	Chlorophenols (commonly used as pesticides, herbicides, and disinfectants), PCPs, ie wood preservatives

Cancer Risk vs General Population



Testicular Cancer	102%	(2.02x)
Multiple Myeloma	53%	(1.53x)
Non-Hodgkin's Lymphoma	51%	(1.51x)
Skin Cancer	39%	(1.39x)
Prostate Cancer	28%	(1.28x)
Malignant Melanoma	31%	(1.31x)
Brain Cancer	31%	(1.31x)
Colon Cancer	21%	(1.21x)
Leukemia	14%	(1.14x)
Breast Cancer in Women (6x)	774.6 per 100,000	(129.1)*

*based on San Francisco FD Female FF study (40 of 270 women diagnosed)



What's in the air?

38 Fires
(June '09 – Feb '10)

**Post Fire
Environment**



Exceeded NIOSH IDLH Levels



- Nitrogen Dioxide
- Acrolein
- Carbon Monoxide
- Arsenic
- Mercury



Chemical at or Above Recommended STEL



- Nitrogen Dioxide
- Hydrogen Chloride
- Carbon Monoxide

At or above OSHA PEL-TWA



- Arsenic
- Acrolein
- Benzene
- CO
- Formaldehyde
- Gluteraldehyde
- Hydrogen Cyanide
- Hydrogen Chloride
- Mercury
- Ozone
- Nitrogen Dioxide

IARC MONOGRAPHS VOL. 132: OCCUPATIONAL EXPOSURE AS A FIREFIGHTER

Occupational exposure as a firefighter is **carcinogenic to humans (Group 1)** on the basis of **sufficient evidence for cancer in humans**



The *IARC Monographs* classification indicates the level of certainty that an agent can cause cancer (*hazard identification*)

Higher level of certainty Lower level of certainty



Cancer types with **sufficient evidence** for cancer in humans:



Mesothelioma Bladder cancer

Cancer types with **limited evidence** for cancer in humans:



Colon cancer Prostate cancer Testicular cancer Melanoma of the skin Non-Hodgkin lymphoma

Strong mechanistic evidence in exposed firefighters



Exposures of firefighters include combustion products, diesel exhaust, building materials, asbestos, chemicals, shift work, ultraviolet radiation



Firefighters respond to various types of fire



Structure



Wildland



Vehicle

Firefighters and Risk for Cancer?



Risk may be higher

- Healthy Worker Effect –
 - Held to higher medical standards (Medical / Physical)
- CDC Mandatory Reporting –
 - Confirmed diagnosis must be reported, occupation not considered
- Occupation not factor after retirement
 - Career not recognized as retiree.



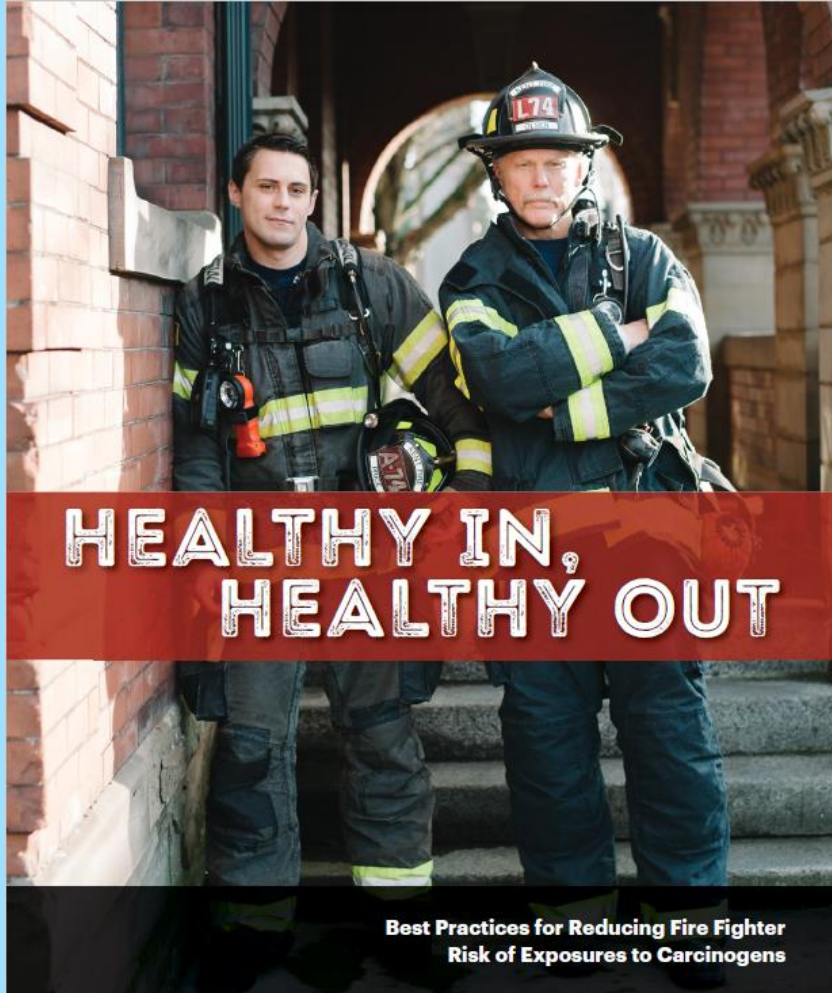
WCSFF
CANCER FOUNDATION

In Honor of Bill Hoover



If you knew something bad was happening, would you do something about it?

What is being done?



Healthy In – Healthy Out
2014 SHIP Grant
Kent FD, WSCFF, IAFF Locals

Best Practices for Reducing
Firefighter Risk of Exposures to
Carcinogens

(36 pages)

Healthy In – Healthy Out



What's new in Washington?



Healthy In – Healthy Out 2.0

1. Re-ignite cancer awareness and prevention based on new data
2. Added awareness of other health issues
 - Sleep Deprivation
 - Muscle Skeletal
 - Nutrition
 - PTSD / PTSI

Firefighter Injury and Illness Reduction (FIIRE)

What is it?

1. Safety initiative for employers of Professional Firefighters
2. Departments who participate will receive a 10% discount on workers compensation insurance premium
3. Departments who participate eligible for grant funding to purchase equipment and gear to implement best practices.

Program Goal

Reduce incidence of firefighter injury and illness through proactive risk management and implementation of best practices according to RCW 51.40.170



Provides medical coverage and financial support during treatment and or disability

Cardiovascular
Respiratory
Infectious Disease
Cancer

prostate cancer	primary brain
malignant melanoma	leukemia
non-Hodgkin's lymphoma	bladder
ureter	colorectal
multiple myeloma	testicular
kidney	Mesothelioma
stomach	Non-melanoma
breast	cervical

Qualifying criteria

- Entrance physical showed no evidence of malady
- 10 years full-time
- Must file within 1 year for injury, 2 years for occupational illness

Routes of Exposure



- Inhalation



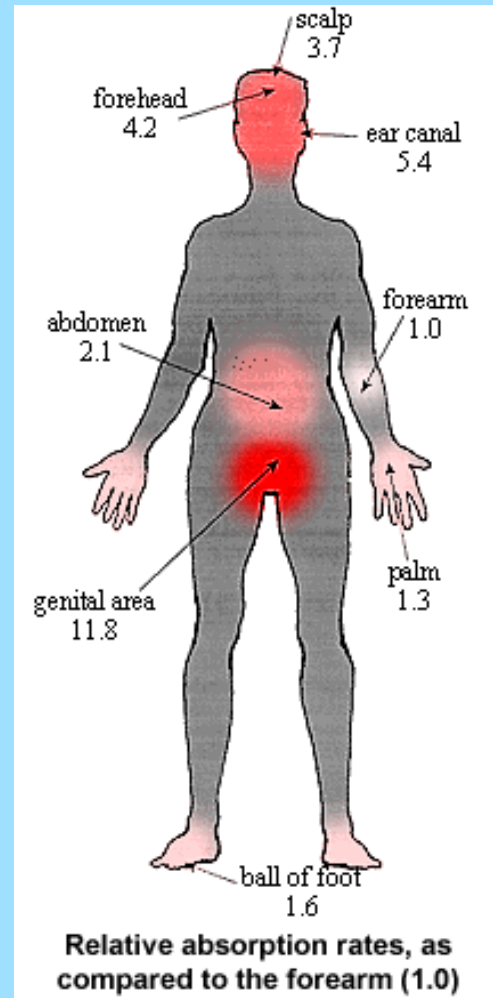
- Ingestion



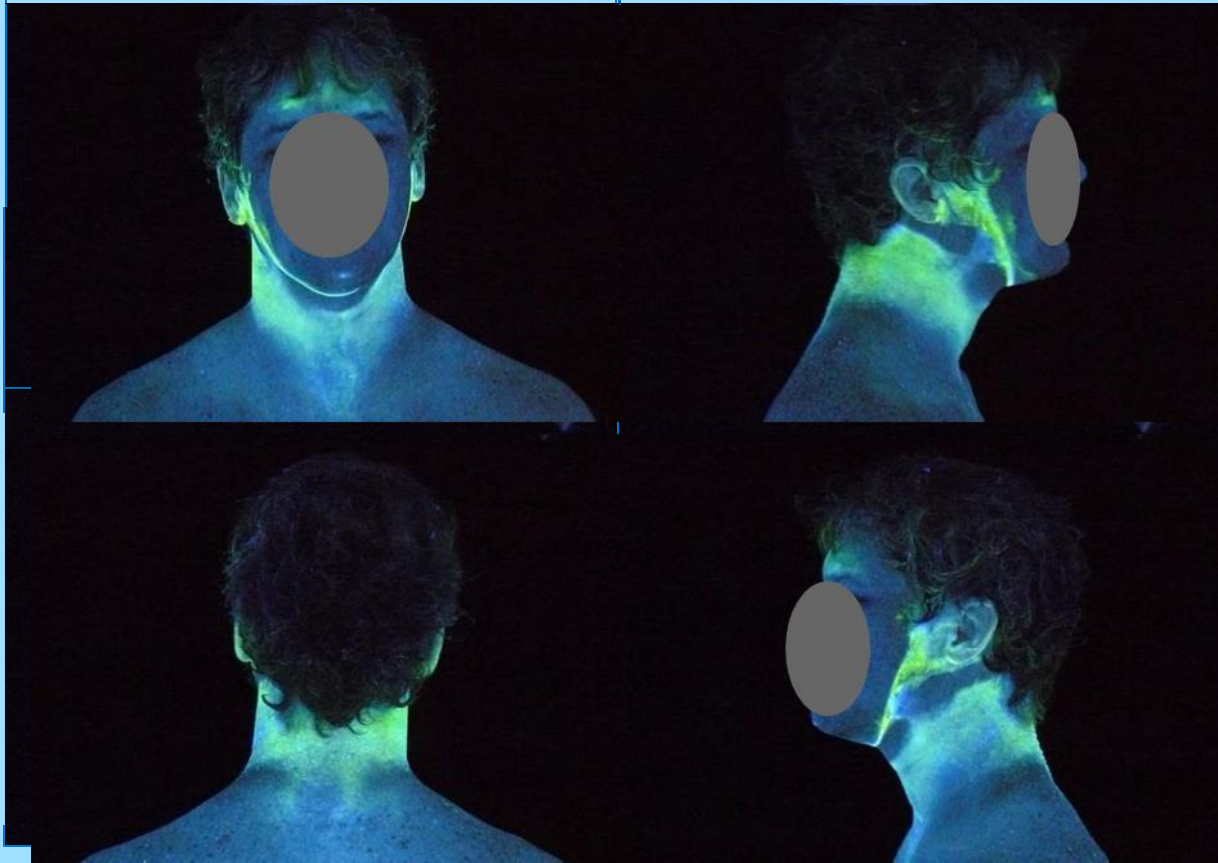
Routes of Exposure



- Absorption



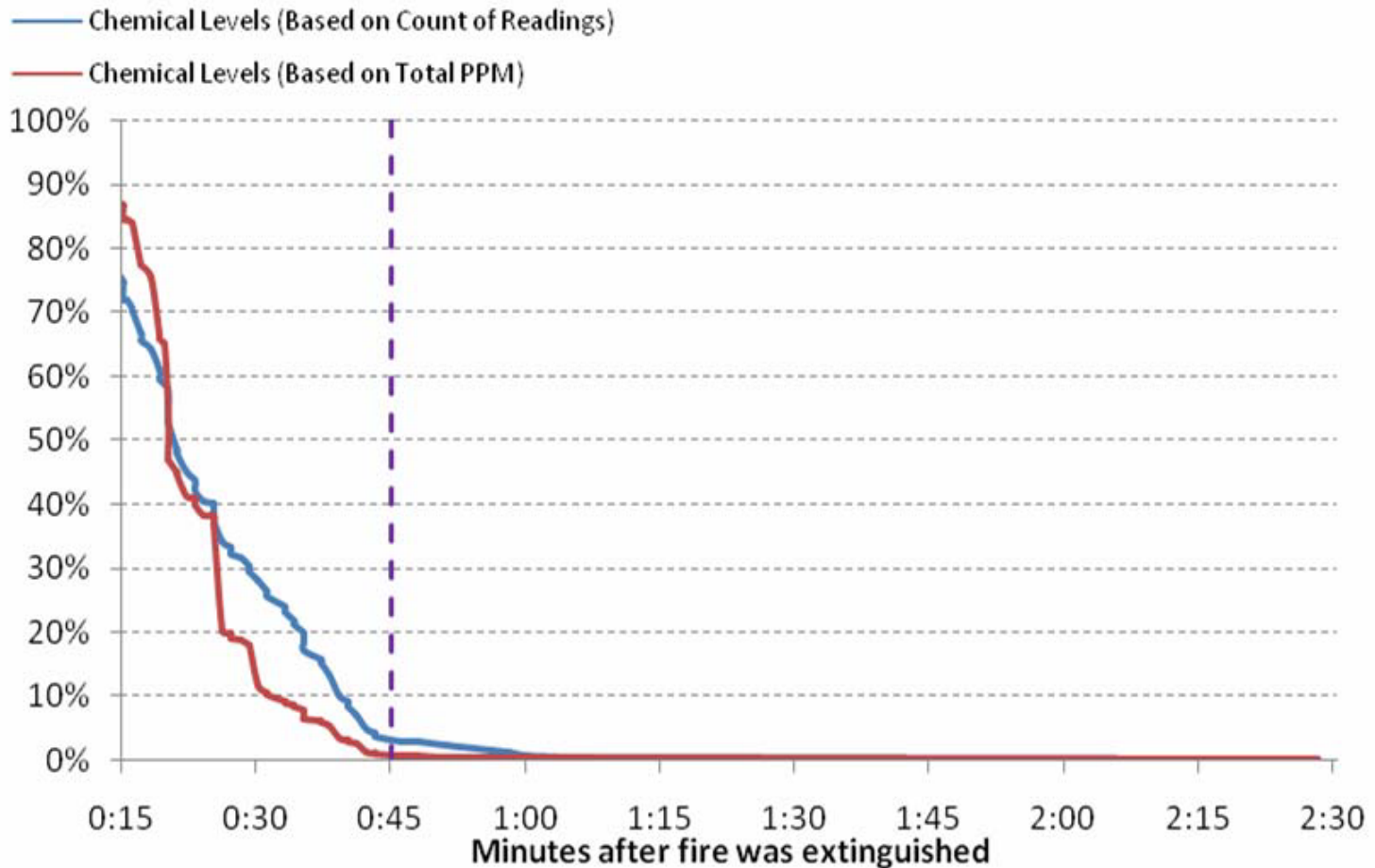
IAFF / DOD Particle Infiltration Study



The background photos confirm the test participant was clean prior to donning the test garment.

Ventilation and Air Quality after the Fire

After 45 minutes the majority of chemical readings have dissipated
96% of the total readings (by counts) and 99% of total readings (by PPM)
have dissipated



What you can do on-scene



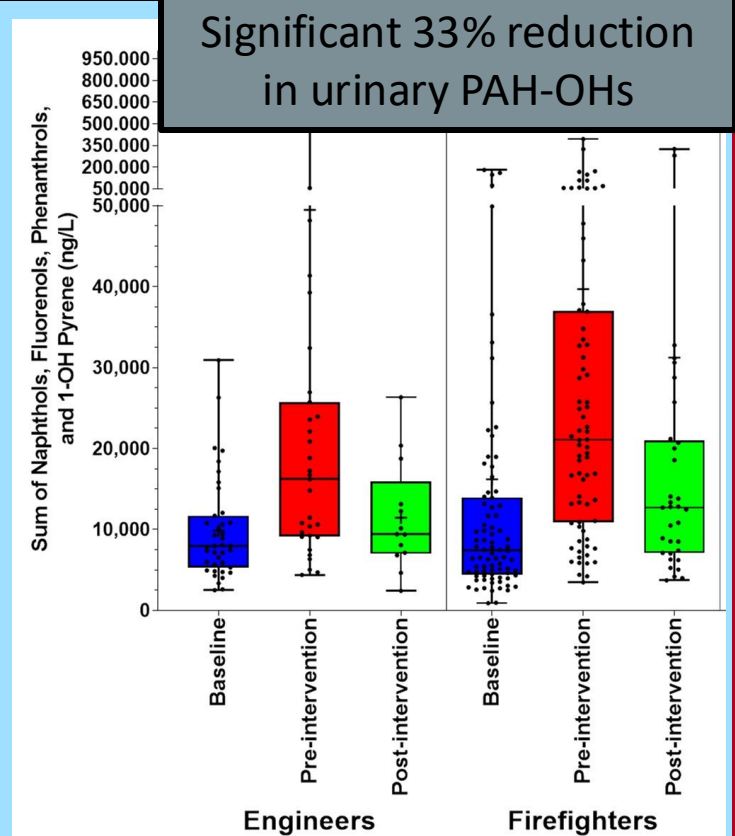
- Don't remove regulator until gross decon
- Stay out of the smoke / fire
- Cool the hot materials (so they don't smolder)
- Ventilation
- Overhaul as much as necessary
- Simple decontamination at fire scene with soap and water (wash your hands before you eat/drink)
- Include Tools /Equipment
- Bag dirty gear before leaving scene

What you can do on-scene



Washdown while still on air prior to doffing gear, using a brush with soap and water for 90 seconds

On-scene Washdown



At the station



- Address dermal exposure with better personal decontamination (Hot Shower)
- Wear appropriate protection while washing all PPE after fire to reduce secondary exposure
 - ✦ Wash gloves, boots and hoods
 - ✦ Wash your helmet (inside and outside) including shroud
- Document your Exposures



Washington State
Council of Fire Fighters
P I I E R S

Personal Injury and Illness Reporting System

What is PIIERS

- An electronic file cabinet of *your* health history
- A place to keep records of your work related injuries, illnesses and exposures
- A place to upload and store important documents
 - Annual physicals
 - Workers Comp claims
 - Incident reports

What it is NOT

- A replacement OSHA 300 reporting requirements
- Replacement of your departments reporting policy
- A public record



Washington State
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PIIERS

Personal Injury and Illness Reporting System

Purpose of PIIERS reporting

- Provide individual records of exposure and health events.
- Provide data for future work-related illness and disease claims.
- Identify new frequent, or severe exposure scenarios.
- Provide data for developing prevention and education materials for hazardous exposure.
- Establish meaningful dataset to assess health outcomes of occupation

NFR for Cancer

Mission: To generate detailed knowledge about cancer in the fire service through a voluntary registry that reflects our nation's diverse firefighters.

Vision: To equip the fire service and public health communities with the knowledge they need to reduce cancer in firefighters.



**NATIONAL
FIREFIGHTER
REGISTRY**

Understanding &
Reducing Cancer

Components:

1. **Collect self-reported information** on workplace & personal characteristics through [NFR.cdc.gov](https://www.nfr.cdc.gov)
 - ✦ *Takes about 30 minutes to enroll*
2. **Obtain records from fire departments or agencies** to track trends and patterns of exposure
3. **Link with health information databases** including state cancer databases
4. **Make de-identified data available** for external researchers

I have Cancer....What Now



WSCFF

Cancer Foundation

- Go to wscffcancer.org to Request Assistance
- Provide name, phone and email
- We will contact you to provide a toolbox, mentor and references

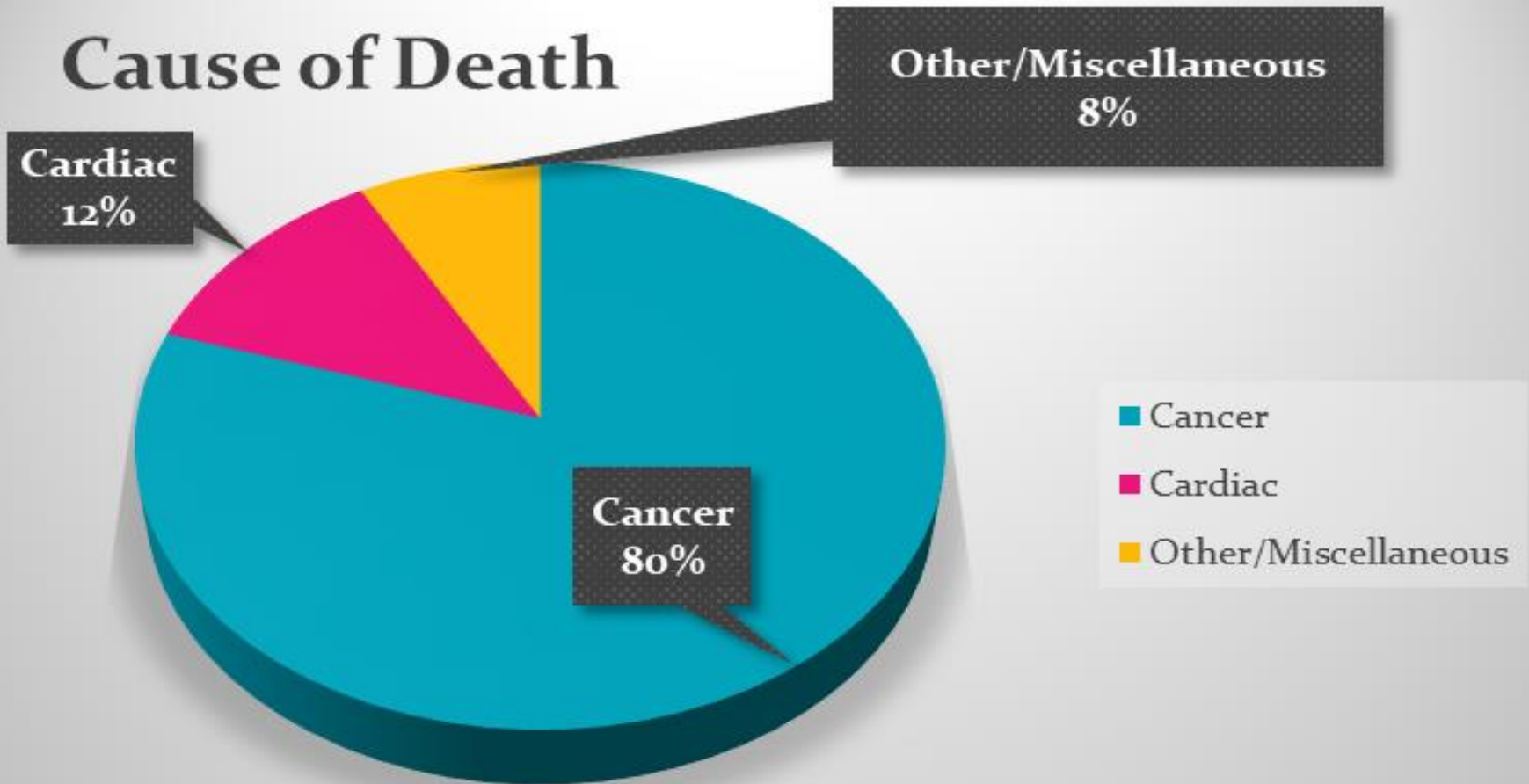
Partnerships

- DRS Ombuds
- Labor and Industries
- Financial Planner
- Professional Counseling

IAFF Fallen Firefighter Memorial



Cause of Death



source: IAFF LODD Database 2010 through 2020

A Fence or A Hospital?

