INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS

Fire Fighter Cancer Risk

Steve Yannarell
Health and Safety Specialist
Department of Science & Research

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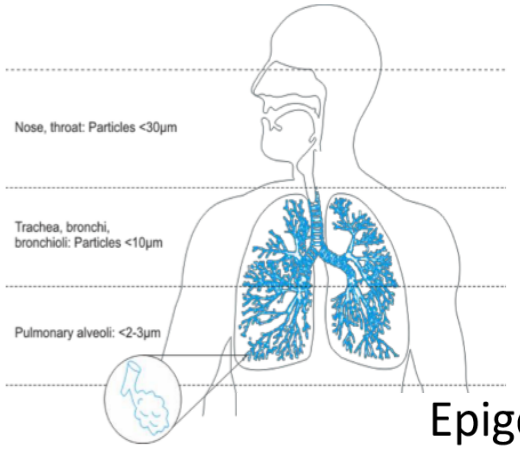
Introduction

- Fire Fighter Exposure Characterization
- Evidence Based Action
- New Areas of Focus
- Commitment from Leadership
- New and Existing Partnerships

If it's in the air or on skin it is in the body

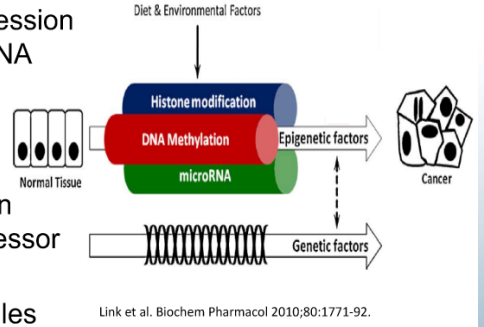
Potential Routes of Exposure: Inhalation

- Particles, gases and vapors
- Particles
  -If inhaled, particles *can* deposit in the respiratory tract
  -Deposited particles may be ingested, translocate to blood and/or other organ systems



Epigenetic Changes

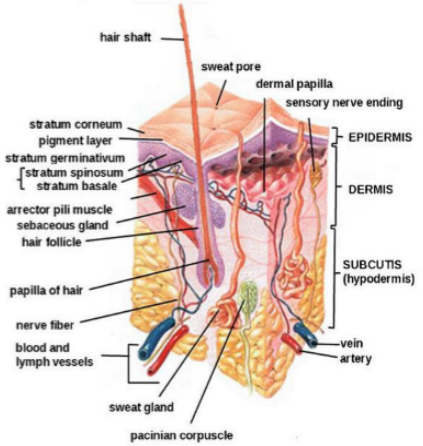
- Change in gene expression without changes in DNA sequence
- Profound roles in carcinogenesis
- DNA hypermethylation silences tumor suppressor genes
- miRNA: small molecules that control gene expression
  - Can act as oncogenes or tumor suppressor genes



Link et al. Biochem Pharmacol 2010;80:1771-92.

Potential Routes of Exposure: Dermal

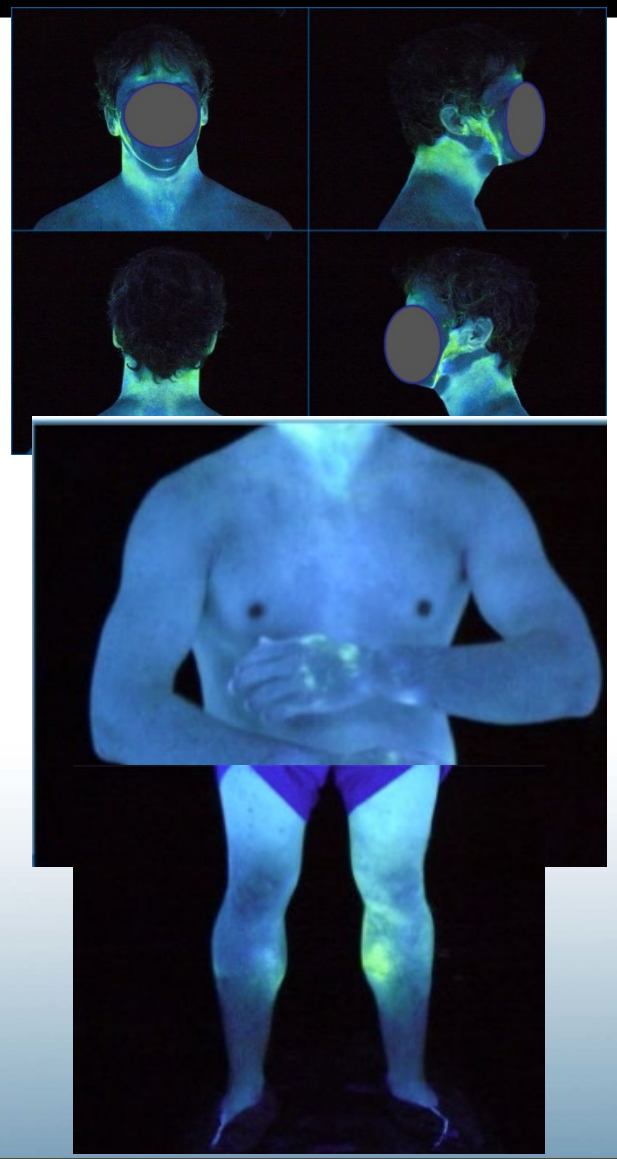
- *Some* liquids, vapors and gases can be adsorbed directly through skin
- *Possible* for solid particles
  - Studies inconclusive
  - Sufficiently small (nm)
  - Flexed, damaged, diseased skin
- Surface area of respiratory system ~ **80x** that of skin
- Rate of absorption vs. skin?



ALL personnel on-scene are at-risk

Unseen Risk - 97% of particulate found during overhaul is invisible to the human eye

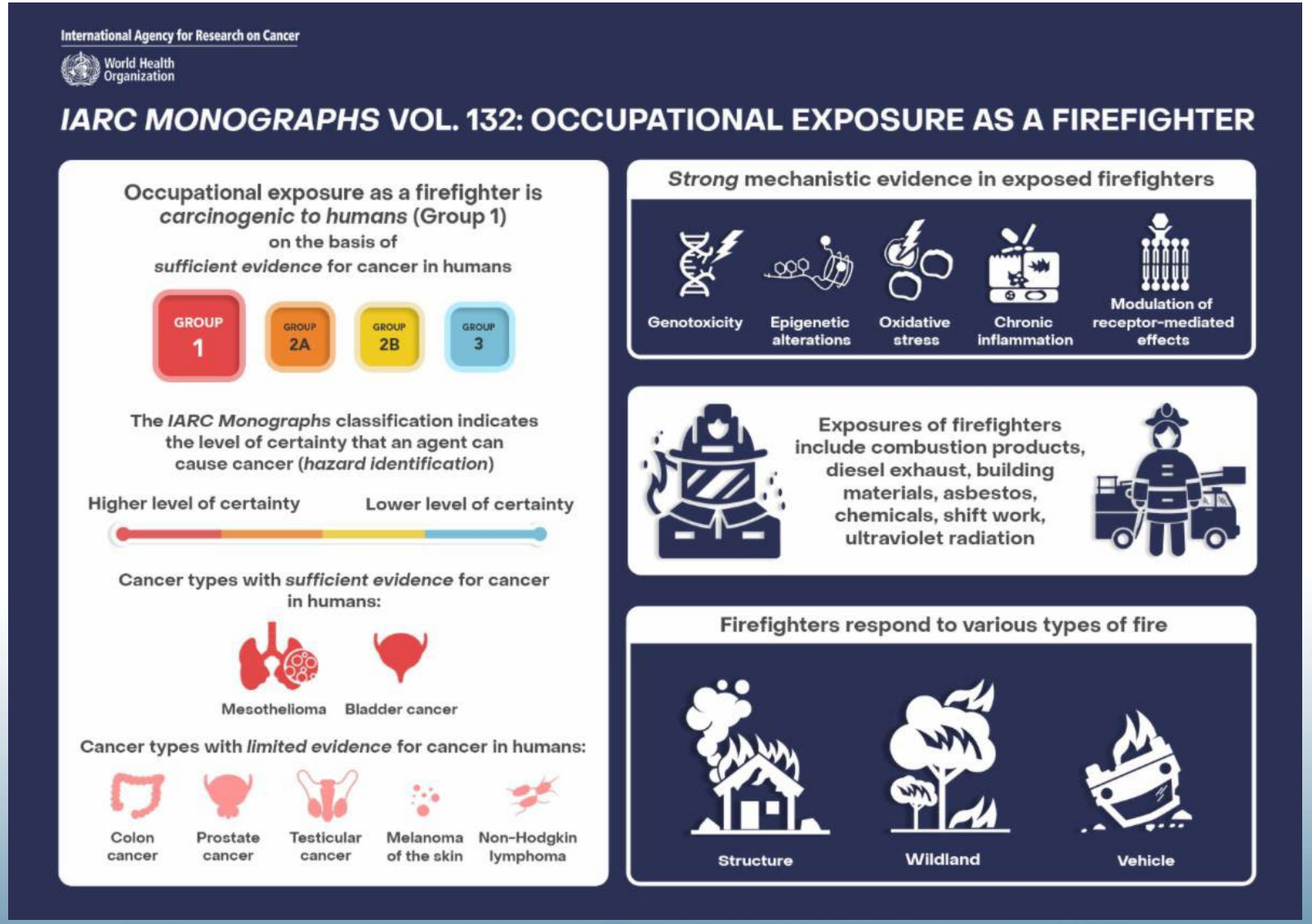
Absorption varies



Hydrocortisone relative absorption[3]

Plantar foot arch	1
Lateral ankle	3
Palm	6
Ventral forearm	7
Back	12
Scalp	25
Forehead	43
Jaw angle	**93**
Scrotum	300

Elevated Awareness



Increased Focus

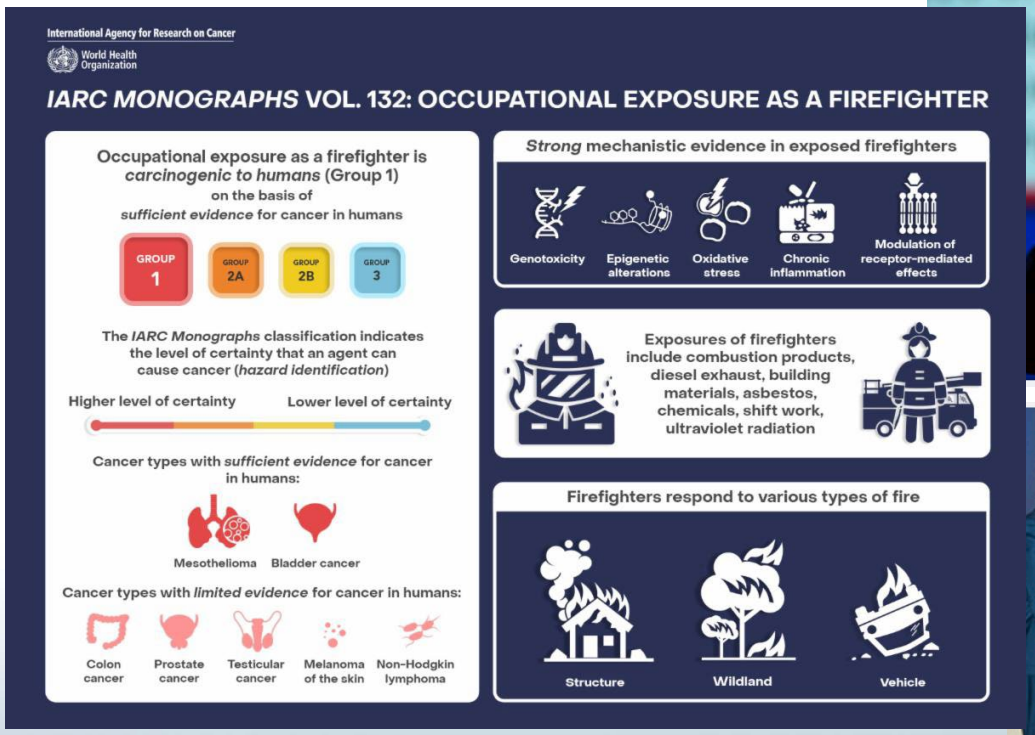
- PFAS in various products and turn-out gear
- Flame Retardants in Uniforms
- Station and Apparatus Contamination
- PPE and Uniform Laundering

IAFF - Resolution 56

- Expanding funding for Cancer Research
- Committee oversight
- Resounding membership support

Partnerships

- **Cancer Advocacy**
  - ACS / CCS
  - FCSN
  - IARC
  - Health, Safety & Medicine



Industry Standards

NFPA

1971 Hazardous Substances Task Group

1970 Consolidation

- Next Edition changes

- Public Comment

Implemented First Revisions

Remove UV Light Test	Restricted Substances Disclosure	Determine Ease of Cleaning	Quantify Leachable Substances	Assess Repellency Properties
Address UV exposure as precondition to other tests	Report target substances of key materials in element	Report efficiencies for removing contaminants	Measure chemicals released by materials	Measure runoff and penetration of chemicals

Investigating New Research Partnerships

PFAS and Interventions

- Partnering
- Feasibility
  - funding
  - capacity
  - program management
  - cohorts

FIREFIGHTER CANCER INITIATIVE

RESEARCH > EDUCATION > PREVENTION

RESEARCH PROPOSAL:

Evaluating Blood and Plasma Donation on Levels of Perfluoroalkyl and Polyfluoroalkyl Substances in American and Canadian Firefighters: A Randomized Clinical Trial

Tuesday, August 30, 2022

THE UNIVERSITY OF ARIZONA

SYLVESTER COMPREHENSIVE CANCER CENTER
UNIVERSITY OF MIAMI HEALTH SYSTEM

NCI Cancer Center
A Cancer Center Designated by the National Cancer Institute

ewg
Know your environment.
Protect your health.

MICHIGAN

Medical Expert Pilot Program

Occupational Illness case denial action:

- JHU and IAFF resources
- Medical and Claim review
- Letter of Presumption or Causation
- Video deposition
- In-person testimony

Summary

IAFF Science & Research

- Supporting fire fighter health research
- Translating new scientific findings to recommendations
- Fostering relationships with academia, and providing a presence in regulation and standards
- Providing deliverables to individuals and the larger membership

Canadian Fire Fighter LODD since 1950

- **30% of deaths in Canada are the result of Cancer**

  – Statistics Canada

- **86% of Canadian Firefighters deaths are from Cancer**

  – University of the Fraser Valley 2018