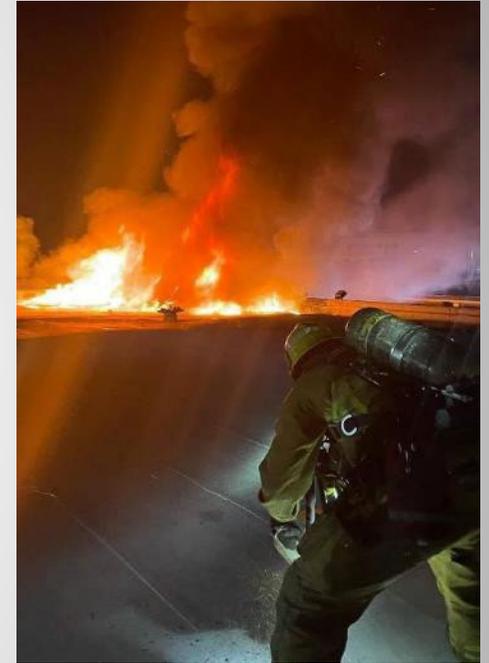


**FIREFIGHTING  
EXPOSURES  
AND  
CANCER BIOLOGY**

# Fight Fire Aggressively



**While Aggressively Preventing Cancer**

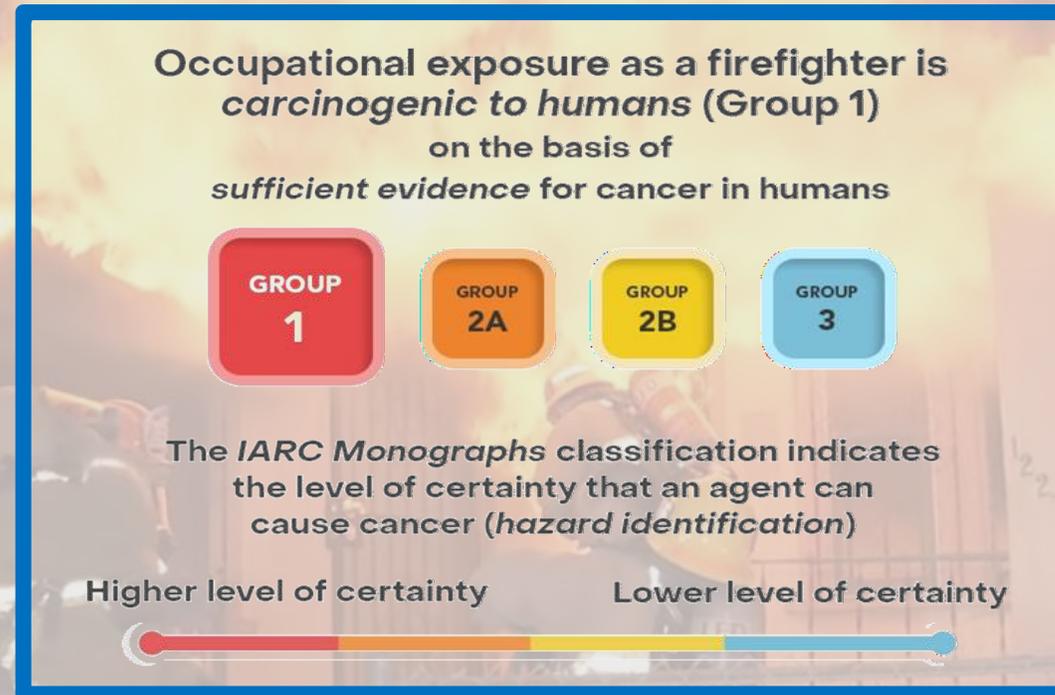
# Firefighting Causes Cancer



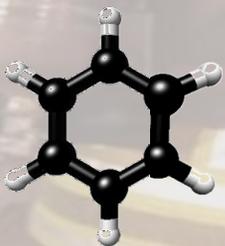
# Firefighting Causes Cancer



The International Agency for Research on Cancer classifies **FIREFIGHTING** as a known **HUMAN CARCINOGEN**...



...in the same Group as other cancer causing agents such as benzene and radiation



# Because of Daily Exposure to Multiple Carcinogens



- Structure Fires
- Wildland Fires
- Vehicle Fires
- Diesel Exhaust
- PM 2.5
- Metals
- Flame Retardants
- Sleep Disruption
- PFAS
- UV Radiation
- Asbestos
- The list goes on...

Products of combustion



# Firefighting Causes Cancer

According to IAFF records:

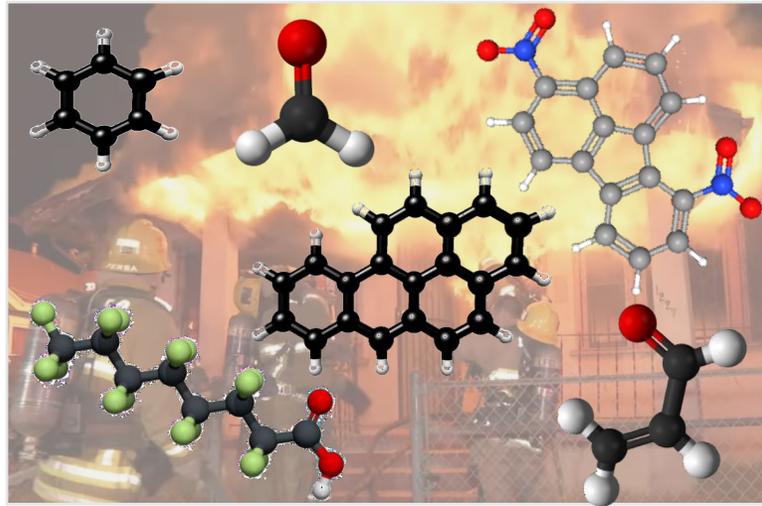
18% OF CAREER FIREFIGHTER LINE OF DUTY DEATHS SINCE 2002 WERE CARDIAC RELATED

**65%** OF CAREER FIREFIGHTER **LINE OF DUTY DEATHS** SINCE 2002 WERE **CAUSED BY CANCER**

# Routes of Exposure to Carcinogens



# Routes of Exposure to Carcinogens



CARCINOGENS  
ON THE  
FIRE GROUND

ROUTES  
OF  
EXPOSURE

INHALATION



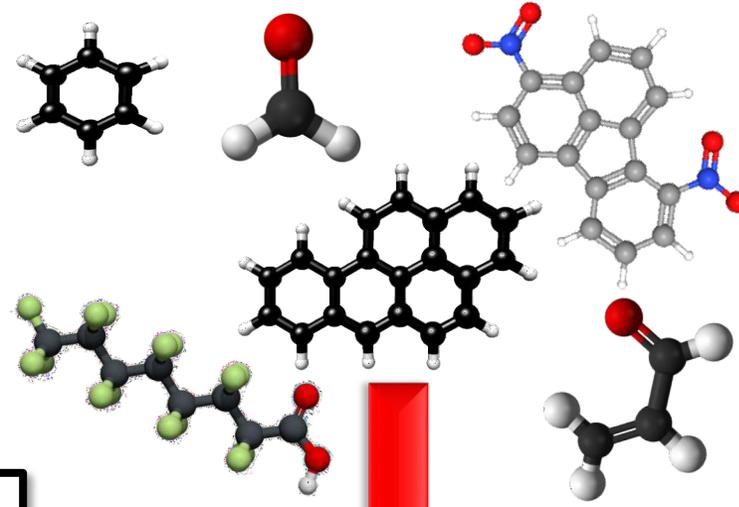
INGESTION



ABSORPTION

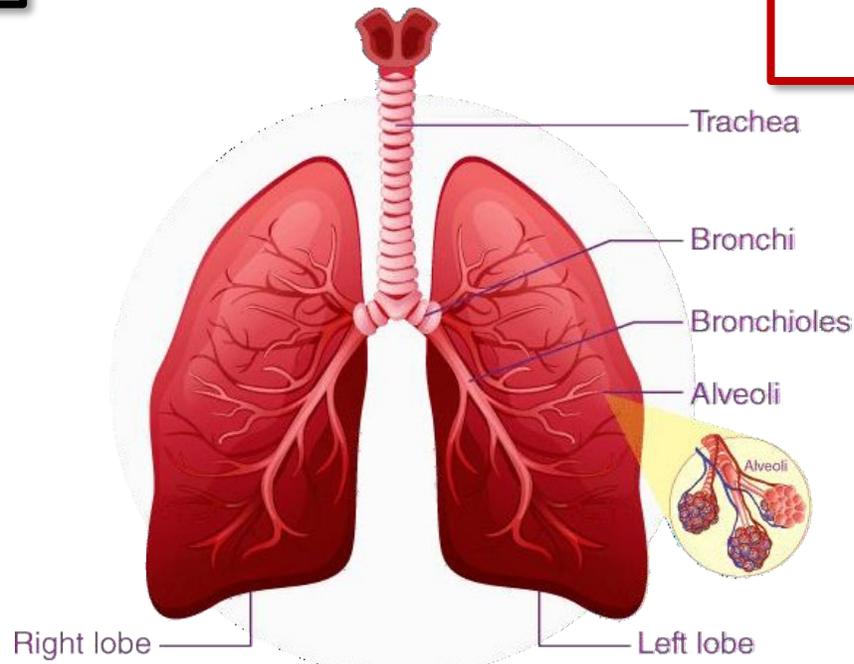


# Exposure via Inhalation

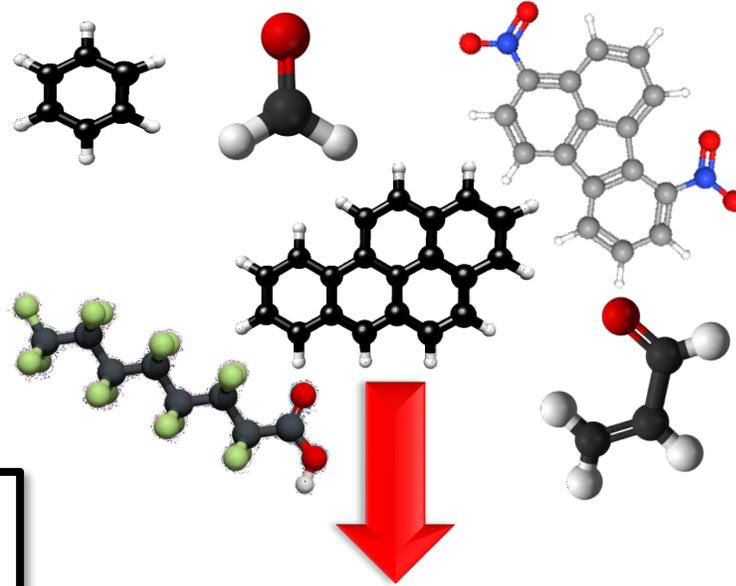


CARCINOGENS  
ARE INHALED

CAN BE PREVENTED  
BY USING SCBA  
DURING ALL PHASES  
OF FIREFIGHTING

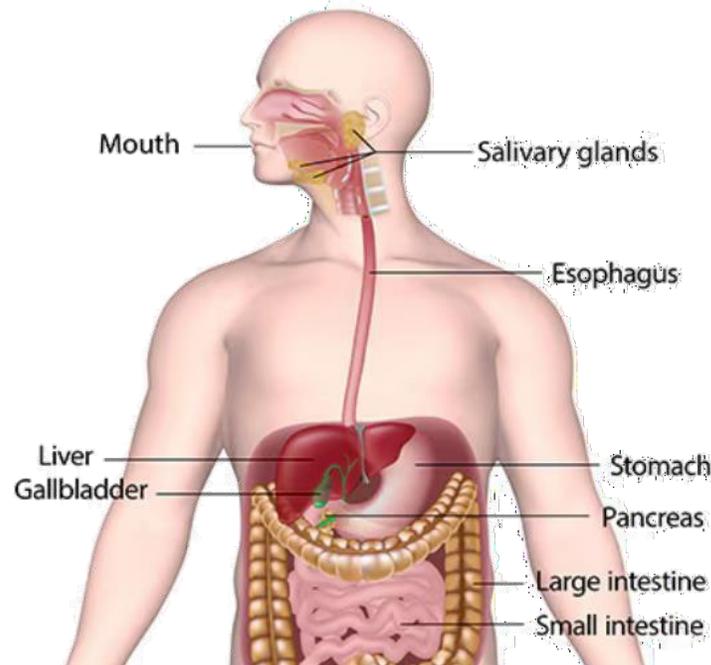


# Exposure via Ingestion



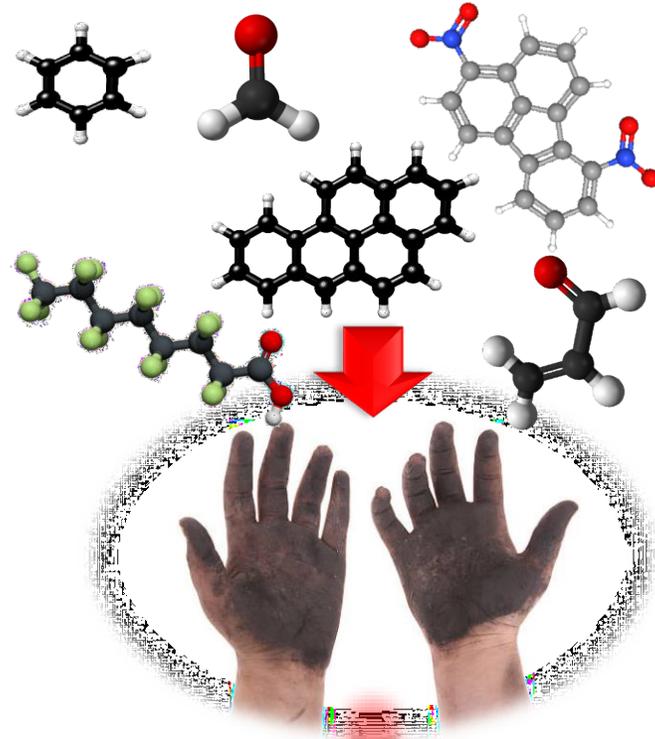
CARCINOGENS  
ARE INGESTED

CAN BE PREVENTED  
BY CLEANING HANDS  
& FACE

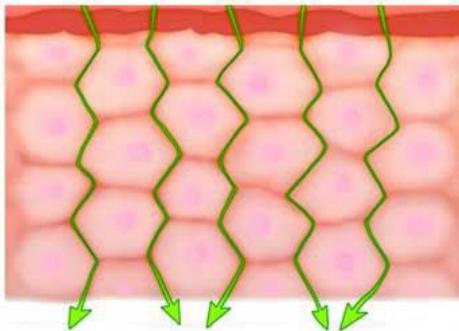


# Exposure via Transdermal Absorption

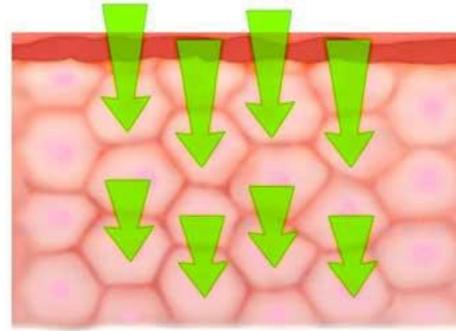
CARCINOGENS  
ARE ABSORBED  
THROUGH SKIN



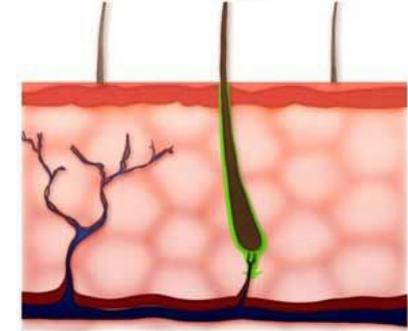
PROCESS OF  
ABSORPTION  
CONTINUES UNTIL  
REMOVED FROM SKIN  
  
SHOWER AS SOON AS  
POSSIBLE AFTER  
EXPOSURES!



INTERCELLULAR LIPID PATHWAY

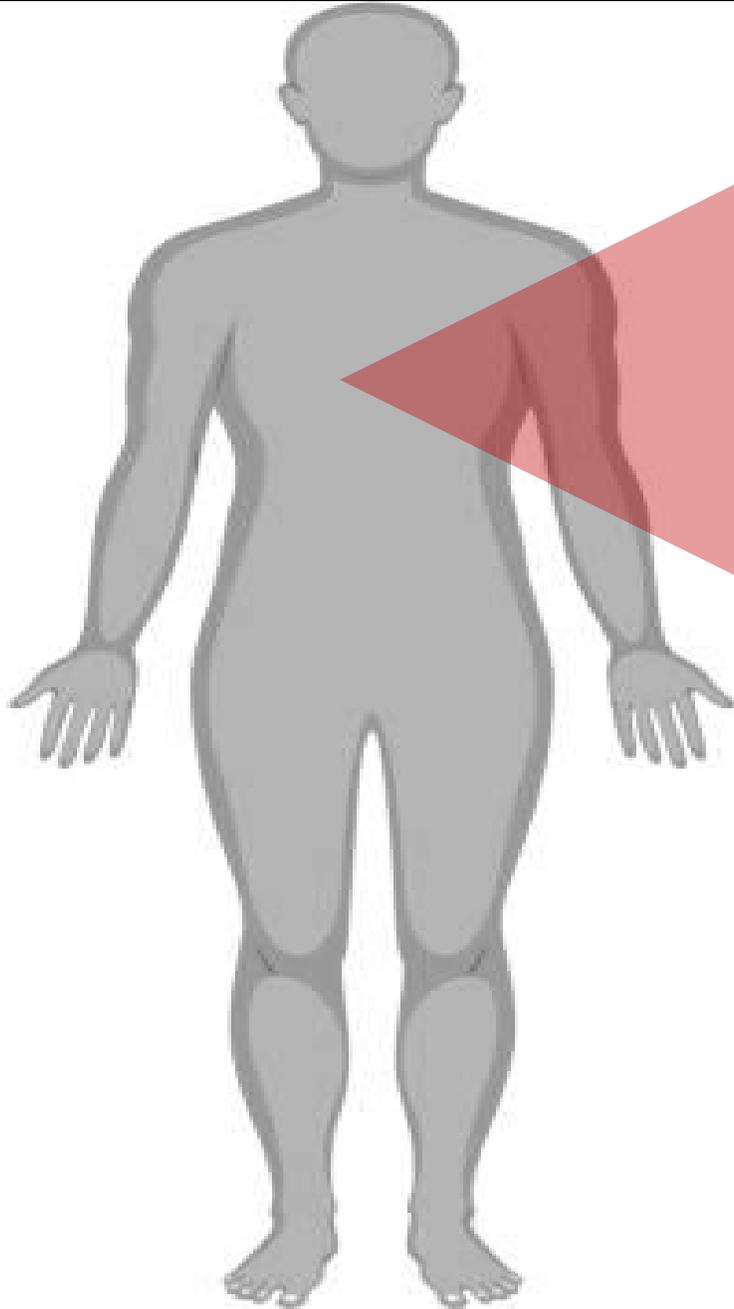


TRANSCELLULAR PERMEATION



HAIR FOLLICLES & GLANDS

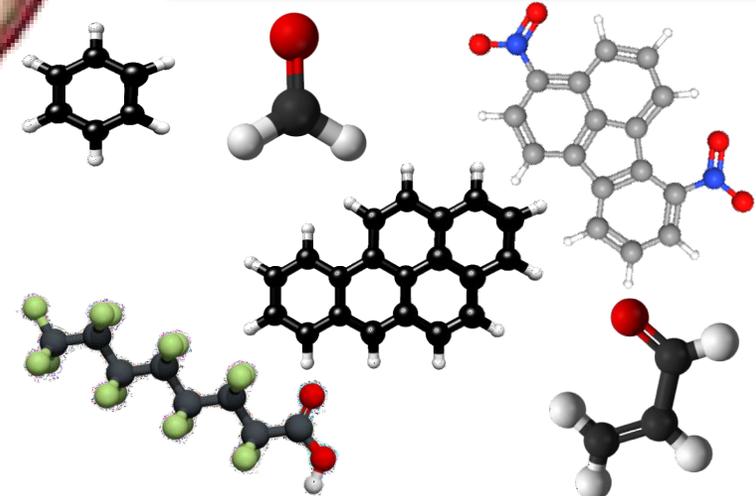
# Carcinogens Can Travel Throughout the Body



CARCINOGENS  
CAN ENTER  
BLOOD STREAM

TRAVEL  
THROUGHOUT  
THE BODY

IMPACT MANY  
ORGANS



# Exposures Drive Biological Mechanisms that Cause Cancer

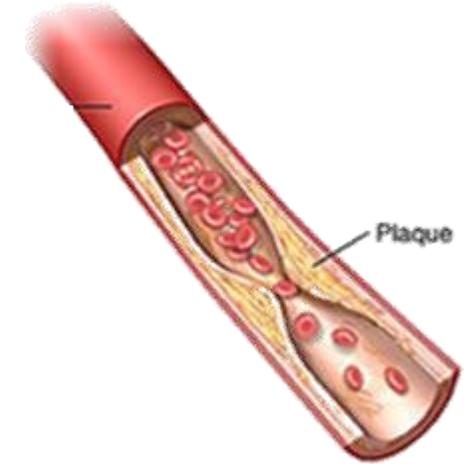


# Biological Mechanisms that Cause Cancer



BEFORE

LOWER RISK FOR HEART ATTACK

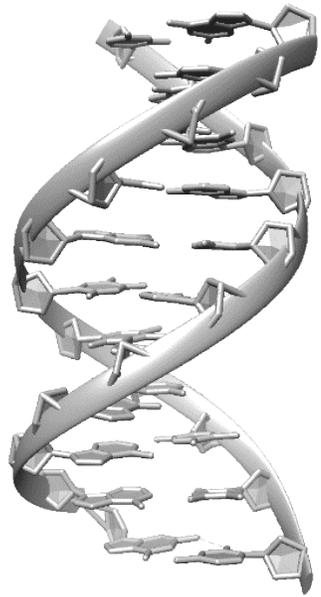


AFTER

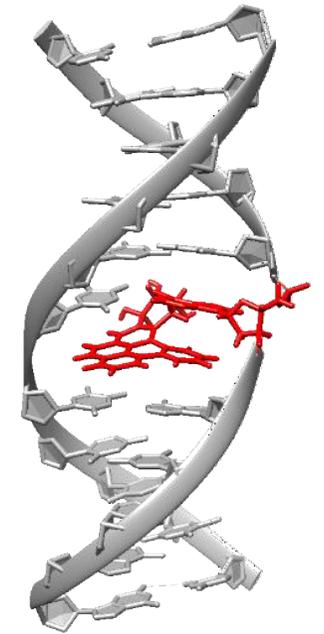
\*\* HIGHER RISK FOR HEART ATTACK \*\*

Similar to how poor diet increases risk for heart disease by clogging arteries....

# Biological Mechanisms that Cause Cancer



BEFORE

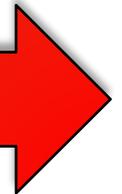


AFTER

LOWER CANCER RISK

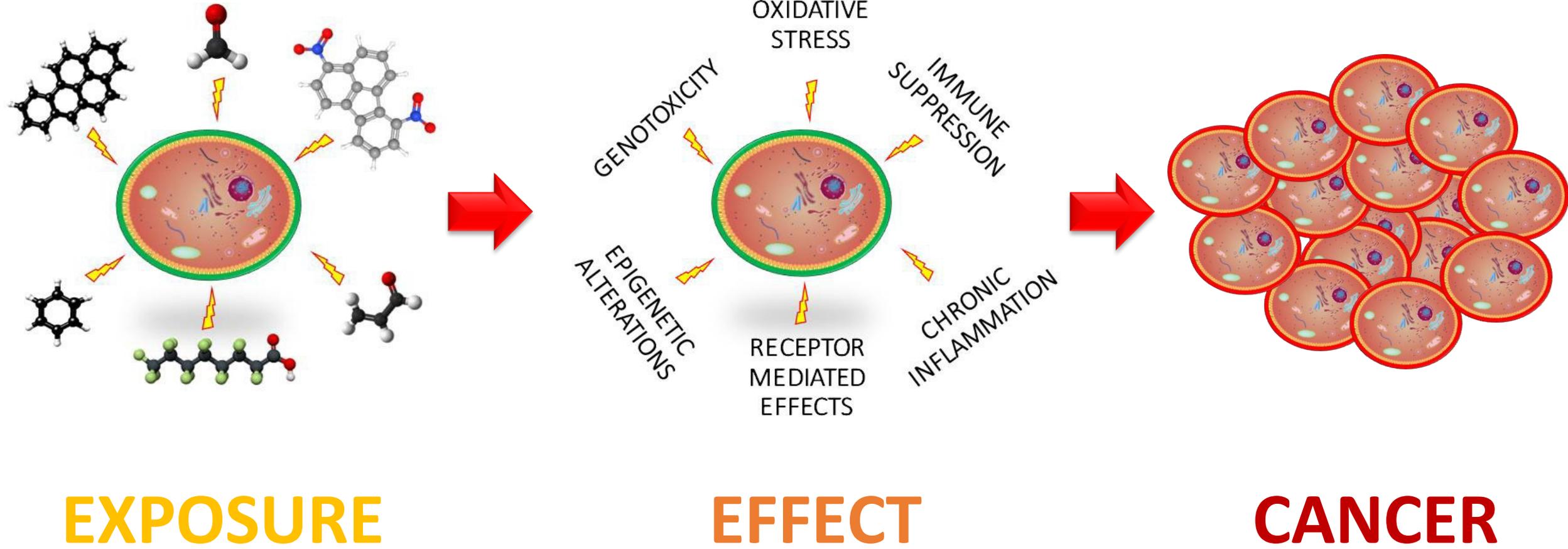


\*\* HIGHER CANCER RISK \*\*



Firefighters' occupational exposures to carcinogens cause cancer promoting biological changes in our cells...

# CARCINOGENESIS: Occupational Exposures Alter How Cells Function Increasing Cancer Risk



# Biological Mechanisms that Cause Cancer

These result in increased risk for multiple cancers in firefighters, including but not limited to:



Mesothelioma



Bladder cancer



Colon cancer



Prostate cancer



Testicular cancer



Melanoma of the skin



Non-Hodgkin lymphoma

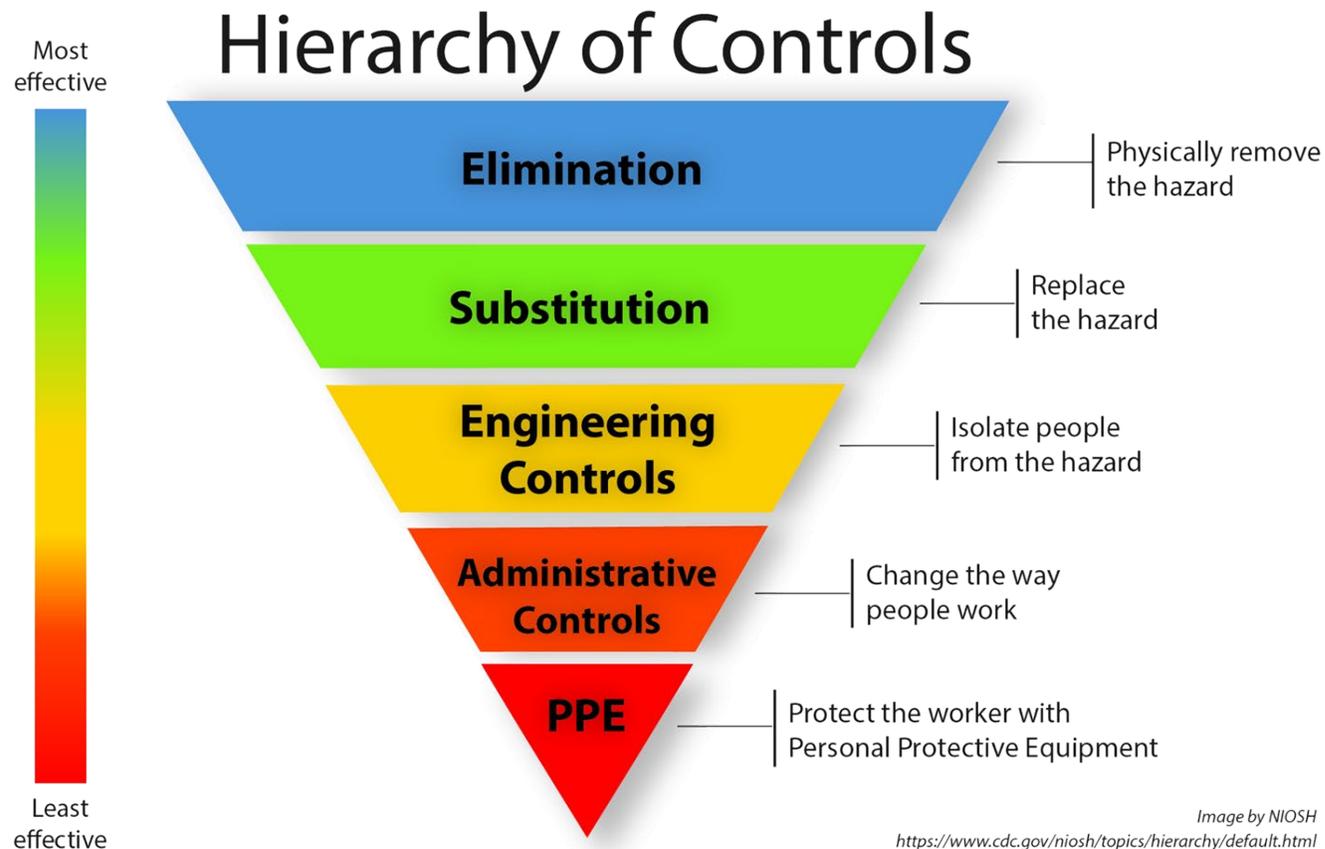
# Biological Mechanisms that Cause Cancer

Every exposure is like a drop in your bucket of cancer risk.

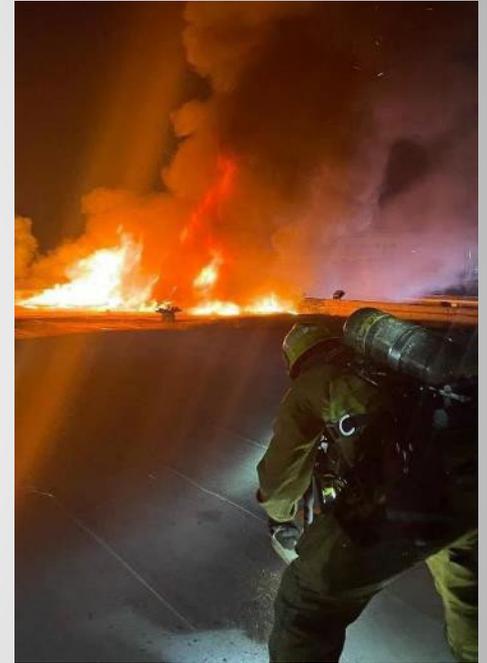


Reduce cancer risk by keeping drops out.

# Reduce Exposures Systematically



# Fight Fire Aggressively



**While Aggressively Preventing Cancer**