DANGERS FROM EXPOSURE TO ASH FROM THE FIRES IN LOS ANGELES

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CALIFORNIA COMMUNITIES AGAINST TOXICS

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OFFENDING

RECOGNIZING THAT THIS IS A HIGHLY CHARGED ENVIRONMENT.

RECOGNIZING THAT MANY PEOPLE ARE SEVERELY TRAUMATIZED BY THE EVENTS THAT HAVE TAKEN PLACE IN LOS ANGELES.

SOMETHING WE SAY MIGHT OFFEND YOU; PLEASE TRY AND GRANT US GRACE AND RECOGNIZE THAT WE ARE TRYING TO GIVE ADVICE THAT HELPS YOU PROTECT THAT WHICH IS MOST PRECIOUS TO YOU: YOUR PEOPLE.

THE CRITICAL QUESTIONS

1. WHAT PUBLIC HEALTH INTERVENTIONS CAN BE TAKEN NOW TO PREVENT MORE DAMAGE TO BOTH THE HEALTH AND CULTURAL VALUES OF THE PEOPLE OF LOS ANGELES.

2. WHAT CAN PRIOR SOCIETAL EXPERIENCES WITH URBAN FIRES TEACH US ABOUT HOW BEST TO MOVE FORWARD?

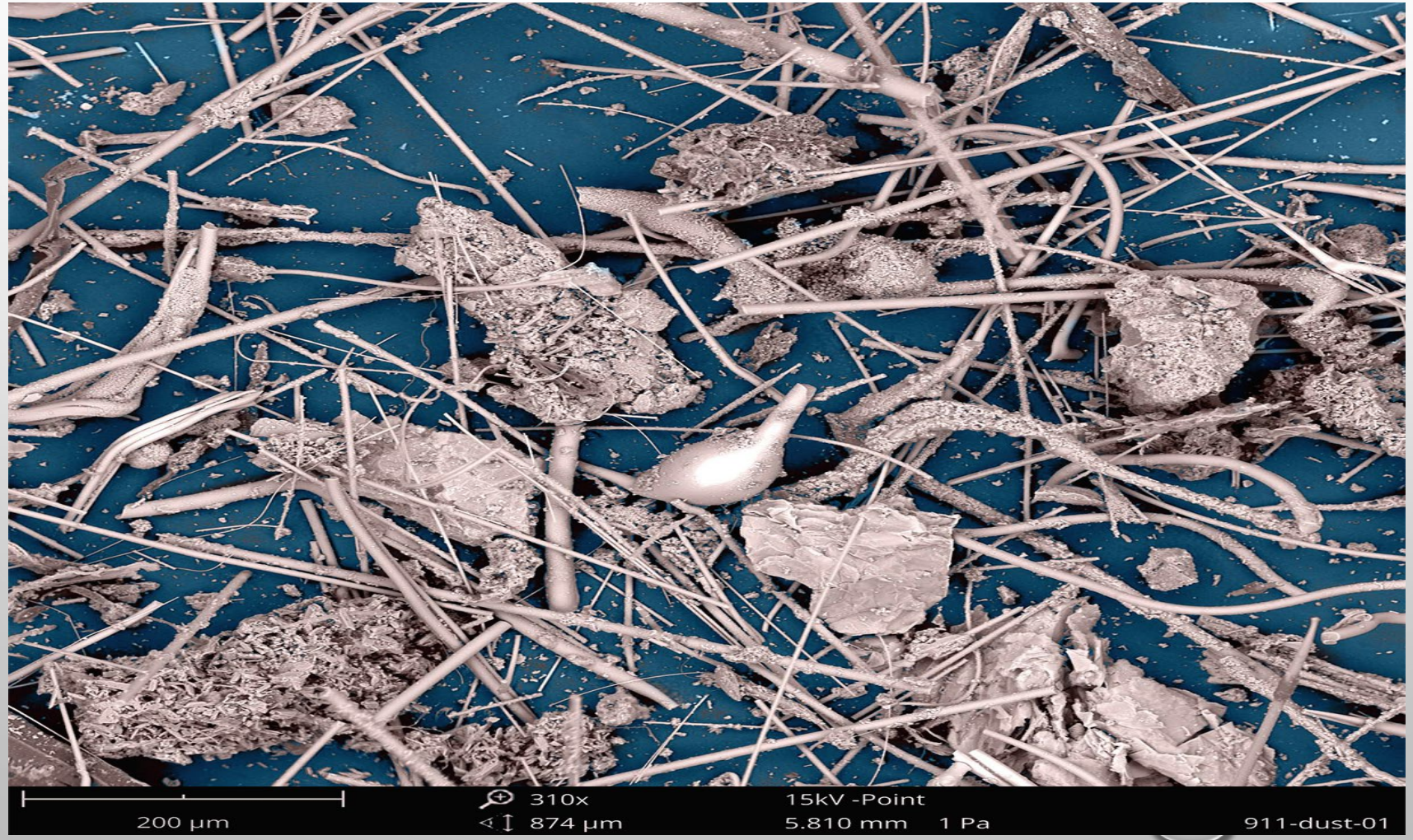
HOW BIG IS THE PROBLEM WE ARE FACING?

For those who are not in LA, here's a piece of information to understand the enormity of what we are dealing with.

The Great Chicago Fire burned 3 square miles and the San Francisco Fire of 1906 burned 4 square miles. The Palisades Fire has burned over 25 square miles, Altadena (Eaton) fire has burned over 18 square miles, and as of right now, all of the fires in Los Angeles have burned over 56 square miles. These larger fires are still not contained, so these numbers will eventually be larger.

For perspective, Manhattan is 22.82 square miles and San Francisco is 46.87 square miles.

WHAT EXACTLY ARE YOU BREATHING?
THIS IS WHAT THE TWIN TOWERS DEBRIS LOOKED LIKE UNDER AN ELECTRON MICROSCOPE.



MORE OF WHAT YOU ARE BREATHING…

USEPA HAS ESTIMATED THE EMISSIONS OF THESE TOXIC CHEMICALS DURING URBAN FIRES

PREVIOUS STUDIES ON THE TOXICITY OF EMISSIONS FROM THE COMBUSTION OF BUILDING MATERIALS AND VEHICLES HAVE SHOWN THAT URBAN FIRES MAY EMIT NUMEROUS TOXIC SPECIES SUCH AS:

- HYDROGEN CYANIDE,
- HYDROGEN FLUORIDE,
- HYDROGEN CHLORIDE,
- ISOCYANATES,
- POLYCYCLIC AROMATIC HYDROCARBONS (PAHS),
- DIOXINS AND FURANS,
- AND A RANGE OF TOXIC ORGANIC COMPOUNDS (E.G. BENZENE TOLUENE, XYLENES, STYRENE, AND FORMALDEHYDE) AND METALS (E.G. LEAD, CHROMIUM, CADMIUM, AND ARSENIC)

SOURCE: HAZARDOUS AIR POLLUTANT EMISSIONS ESTIMATES FROM THE WILDFIRES IN THE WILDLAND URBAN INTERFACE, HTTPS://ACADEMIC.OUP.COM/PNASNEXUS/ARTICLE/2/6/PGAD186/7202258?LOGIN=FALSE

TOXIC CHEMICALS ADSORB ONTO PARTICLES

Depending on the ambient temperature in a fire, dioxins can be adsorbed or chemically bound to smoke particles or remain in a vapor phase. Adsorption is when particles bond with one another, similar to how a magnet bonds with iron, rather than being absorbed like a sponge absorbs liquids.

Photo Courtesy of USGS

To the left is an image of adsorption where the small white particles have adsorbed to a larger carbon particle.

According to the Environmental Protection Agency (EPA), the largest quantified source of dioxin emissions is the uncontrolled burning of household trash, referred to as “backyard” or “barrel burning”. Studies have shown that very small amounts of chlorinated materials can support dioxin formation when burning waste. [12,13]

WHAT DID THE OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION FIND IN HOME FIRES?

ACCORDING TO NIOSH, REMNANTS OF BURNED RESIDENTIAL STRUCTURES MAY CONTAIN:

- RESPIRABLE CRYSTALLINE SILICA—TYPICALLY QUARTZ—FROM DEMOLISHED CONCRETE USED IN FOUNDATIONS, WALLS, AND ROOFING TILES.
- ITEMS LIKE HOME ELECTRONICS AND MELTED VEHICLES ARE SOURCES OF POTENTIAL EXPOSURES TO TOXIC METALS SUCH AS LEAD, CADMIUM, AND ALUMINUM.
- MANY HOMES HAVE PLASTIC FURNITURE AND VINYL BUILDING MATERIALS WHICH GIVE OFF A HOST OF VOCS WHEN BURNED AS WELL AS HYDROGEN CYANIDE.
- PAHS ARE POTENTIALLY CARCINOGENIC SUBSTANCES FOUND IN SOOT OR BURN ASH.
- NIOSH STRESSES THAT ASBESTOS MAY ALSO BE PRESENT IN FIRE DEBRIS, DEPENDING ON THE AGE OF THE AFFECTED BUILDINGS.

BURNED TIRES CREATE ANOTHER HAZARD

- EPA DOES NOT CONSIDER SCRAP TIRES A HAZARDOUS WASTE. HOWEVER, IF A TIRE FIRE OCCURS, TIRES BREAK DOWN INTO HAZARDOUS COMPOUNDS INCLUDING GASES, HEAVY METALS, AND OIL. THE AVERAGE PASSENGER CAR TIRE IS ESTIMATED TO PRODUCE OVER TWO GALLONS OF OIL WHEN BURNED. (SOURCE: RUBBER MANUFACTURERS ASSOCIATION, APRIL 2003.
- AIR POLLUTION IS ALSO PRODUCED BY TIRE FIRES. AIR EMISSIONS MAY INCLUDE POLYCYCLIC AROMATIC HYDROCARBONS (PAHS), BENZENE, STYRENE, PHENOLS, AND BUTADIENE. THESE POLLUTANTS ALSO ABSORB ONTO PARTICULATE MATTER AND CAN BE EASILY INHALED.

CULTURAL IMPERATIVES FOR ENTRY AND REOCCUPATION DEMAND A PROTECTIVE PUBLIC HEALTH RESPONSE

THE CHALLENGE IS TO BALANCE THE COMPETING INTERESTS OF THE DESIRE FOR RE-ENTRY AND RE-OCCUPATION WITH THE PHYSICS OF ASH INHALATION.

WE MISCALCULATED, MISUNDERSTOOD, AND LET THE INERTIA FOR REENTRY, REPAIR, AND RESTORATION OVERRIDE COMMON SENSE HEALTH PROTECTIONS IN NEW YORK AFTER 9/11.

WHAT DID THAT LOOK LIKE IN NEW YORK?

Julian Gomez covers his face during the cleanup at the World Trade Center collapse, September 12, 2001. In 2023, New York passed a bill that requires employers of those who worked in lower Manhattan and northern Brooklyn between Sept. 11, 2001 and May 2002 to alert their past and former workers that they might be eligible for Sept. 11 federal benefits. (Steve Jacobs/Times Union/archive)

STEVE JACOBS

WHY ARE WE SO CONCERNED?

- IT IS RARE FOR AN ENTIRE CITY TO BURN TO THE GROUND.
- USUALLY HAPPENS ONLY DURING TIMES OF WAR, WHEN CIVILIAN POPULATIONS ARE EVACUATED.
- IN LĀHAINĀ AND KULA, PEOPLE WANTED TO MOVE BACK INTO THE ZONE COVERED BY THE ASH AND WANTING TO RE-INHABIT IT QUICKLY FOR A NUMBER OF REASONS; THIS EXACT SAME BEHAVIOR WILL OCCUR IN LOS ANGELES. PEOPLE WANT TO RETURN HOME.
- THIS CREATES EXPOSURE SCENARIOS THAT ARE EXTREMELY PROBLEMATIC FOR PUBLIC HEALTH.
- ESSENTIALLY, THE “DISASTER AFTER THE DISASTER” HAS BEGUN.

WHAT DOES IT LOOK LIKE IN LĀHAINĀ?

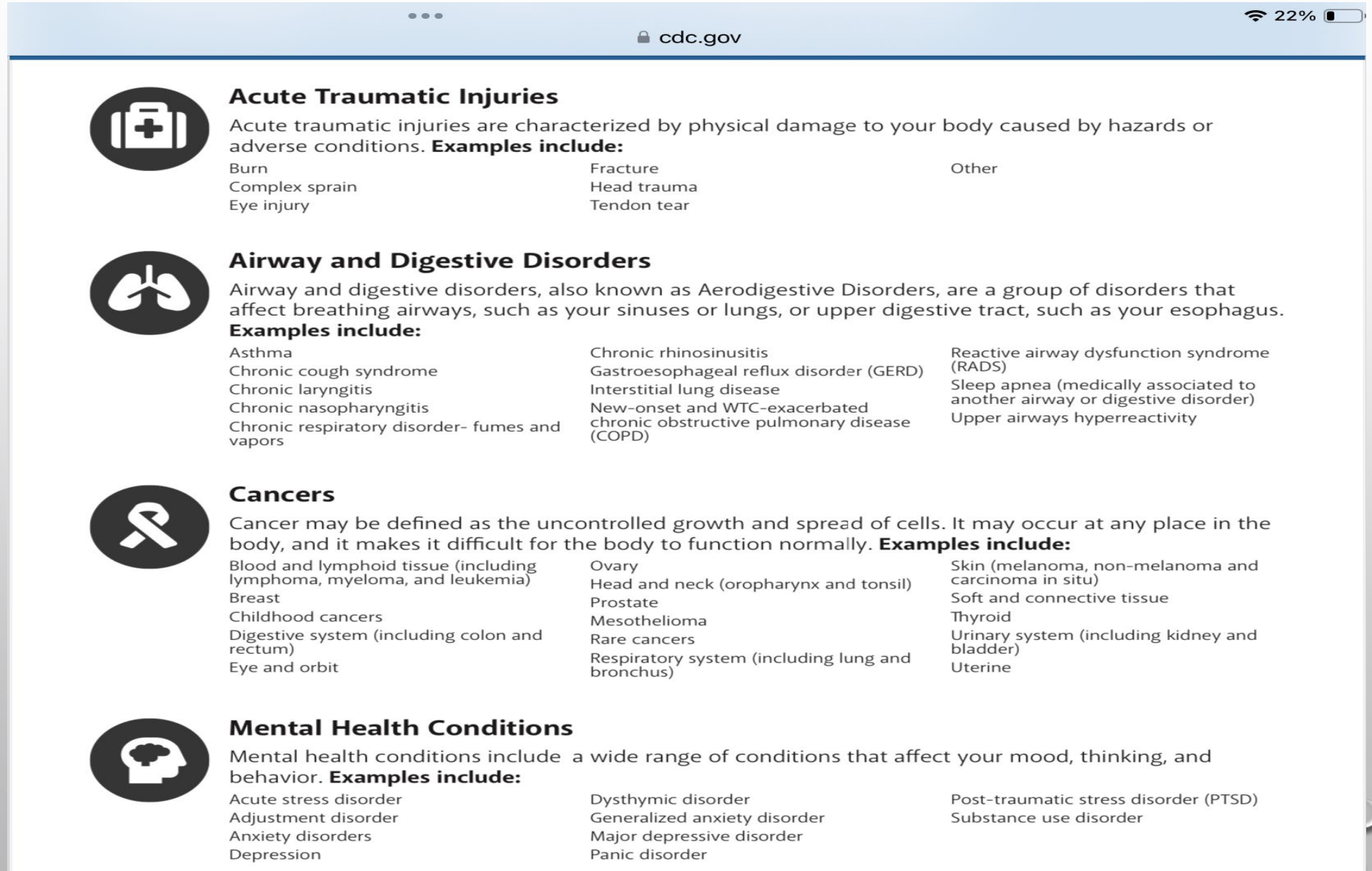
12. People walk along Main Street past wildfire damage on August 11, 2023, in Lahaina. #

Rick Bowmer / AP

WHAT PRECAUTIONS SHOULD WE BE TAKING?

- IF YOU RE-ENTER THE ZONE AFFECTED BY THE ASH/DEBRIS OR CAN BE EXPOSED TO THE WINDBLOWN ASH YOU SHOULD WEAR A MASK THAT PROTECTS YOU FROM THE CHEMICALS IN THE ASH.
- YOU SHOULD NOT EXPOSE YOUR SKIN TO THE ASH/DEBRIS SINCE SOME OF THE CHEMICALS CAN TRAVEL THROUGH YOUR SKIN.

WHAT IMPACTS CAN WE EXPECT TO SEE?



MASK UP, PROTECT YOUR SKIN!
USE N-95 OR P-100 MASKS, SUITS, GLOVES AND GOGGLES.

WHAT IS THE APPROPRIATE MASK FOR THE CHEMICALS WE ANTICIPATE IN THE ASH

CHEMICALS:

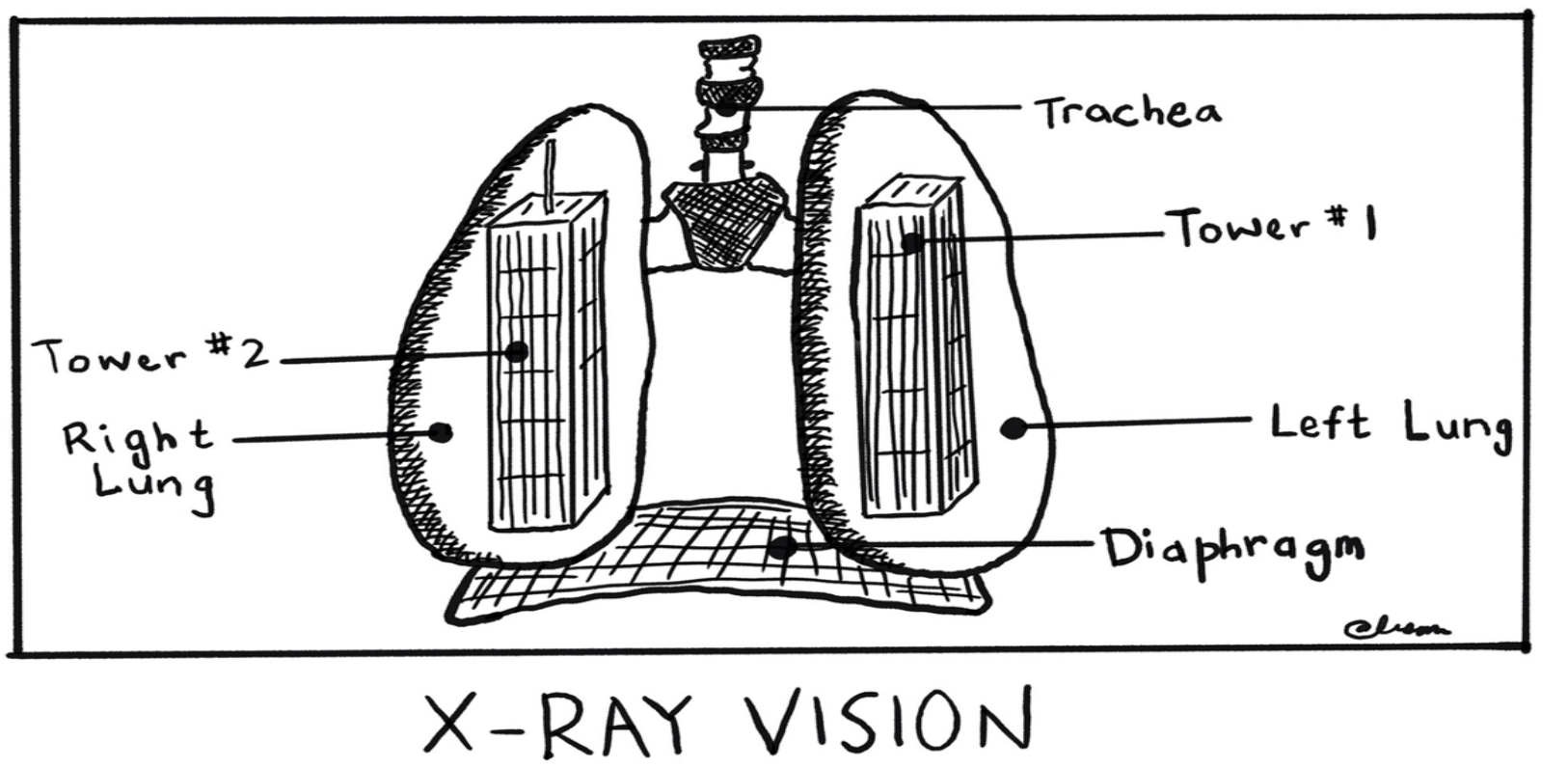
- METALS LIKE LEAD, ARSENIC, CADMIUM
- POLYAROMATIC HYDROCARBONS
- DIOXIN/FURANS/PCBS
- ASBESTOS/SILICA
- VOCS

MASKS:

TO PROTECT YOURSELF FROM EXPOSURE TO ALL THESE CHEMICALS, YOU NEED A MASK THAT HAS PROTECTION FROM ORGANIC VAPORS AND FINE PARTICULATE. USE A N-95 OR A P-100

HERE IS A GUIDE:
HTTPS://MULTIMEDIA.3M.COM/MWS/MEDIA/639110O/3M-RESPIRATOR-SELECTION-GUIDE.PDF

A STUDENT AT A SCHOOL IN NEW YORK CITY DREW THIS PICTURE



For months after the attack, responders and survivors breathed in air filled with small pieces of the World Trade Center Towers. An editorial cartoon by Stuyvesant High School student Ali Shapiro published in the Stuyvesant Spectator in November 2001, highlighted the risks faced by downtown student communities.

Cartoon reproduction created and provided by Ali Shapiro, former Stuyvesant High School Student.

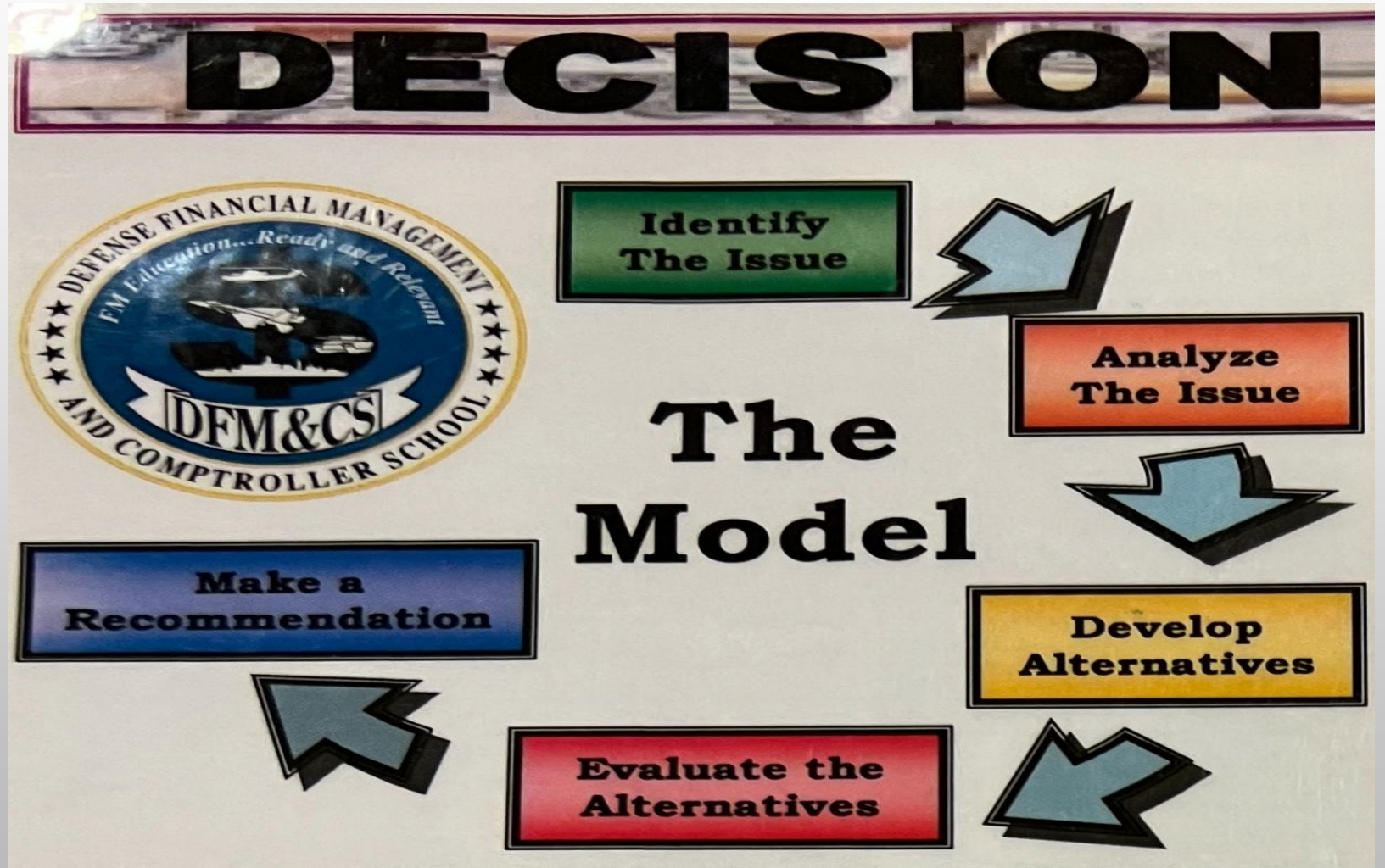
CARR FIRE INVESTIGATION OF REMEDIATION WORKERS FOUND EXPOSURES

THE NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH) SENT A TEAM TO MEASURE EXPOSURES TO REMEDIATION WORKERS AT THE CARR FIRE.

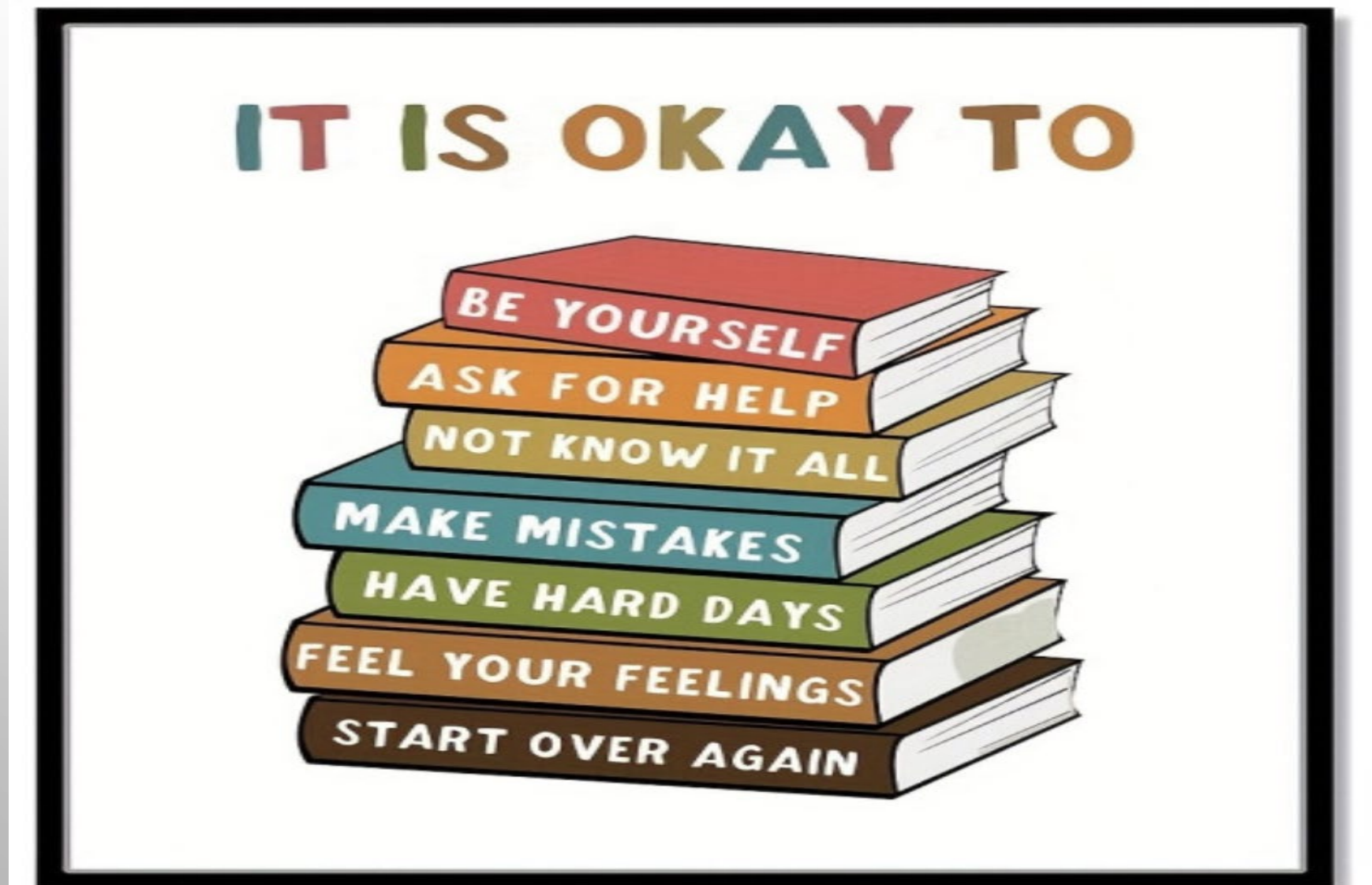
THEIR FINDINGS WERE NOT SURPRISING: THE FOUND METALS AND POLYAROMATIC HYDROCARBONS ON THE WORKERS HANDS, NECKS, AND CLOTHING.

THEY DID NOT TEST FOR DIOXIN/FURANS/PCBS.

GOOD DECISIONS ALWAYS HAVE A RE-EVALUATION LOOP-LET'S STRENGTHEN THAT LOOP.



THANK YOU!


IT IS OKAY TO
BE YOURSELF
ASK FOR HELP
NOT KNOW IT ALL
MAKE MISTAKES
HAVE HARD DAYS
FEEL YOUR FEELINGS
START OVER AGAIN