

Firefighters, Smoke, & Heart Attacks



Adam Brenner Millburn Fire Dept

Cost to Outfit a Firefighter

- ...Helmet - \$300
- Breathing... Apparatus - \$4000
- ...PASS device
- ...Coat - \$800
- Pants ... - \$600
- ...Gloves - \$90
- Boots ... - \$250

Life of a Firefighter ...Priceless!

1-1


ACCOUNTABILITY

EST. 1914 • DEATH • FIRE • FIREFIGHTER • EVERYONE GOES HOME • LIFE SAFETY INVESTIGATES

NATIONAL FALLEN FIREFIGHTERS FOUNDATION

TODAYS DISCUSSION

- EXAMINING THE DANGERS THAT EFFECT FIREFIGHTERS.

UNDERSTANDING  THE HAZARDS THAT CAUSE FIREFIGHTERS TO HAVE HEART ATTACKS

HOW TO PREVENT THEM

THINGS THAT CAN GET YOU KILLED

- LACK OF EXPERIENCE
- LACK OF KNOWLEDGE
- NOT WORKING WITH AND WATCHING
OUT FOR OTHERS
- LIKE THIS GUY!!!!!!!!!!!!

OTHER THINGS THAT CAN KILL US

- **NOT USING ALL THAT IS
AVAILABLE TO US**

P.P.E.



NUTRITION

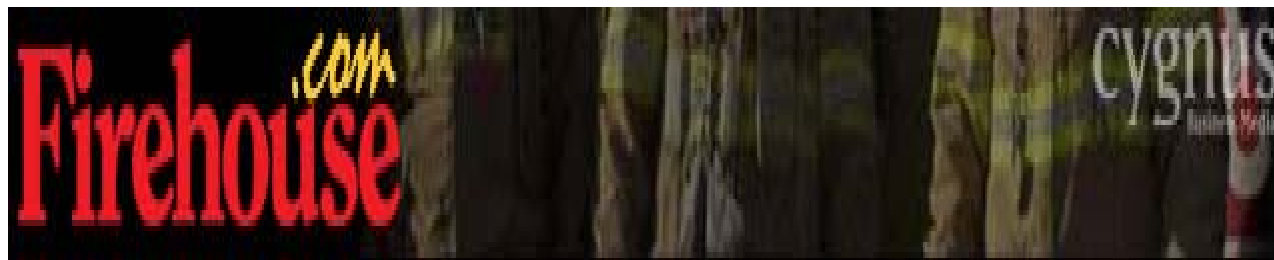


PHYSICAL FITNESS TRAINING



RESOURCES

Fire Engineering



RECENT 9-1-1 SCREW UP

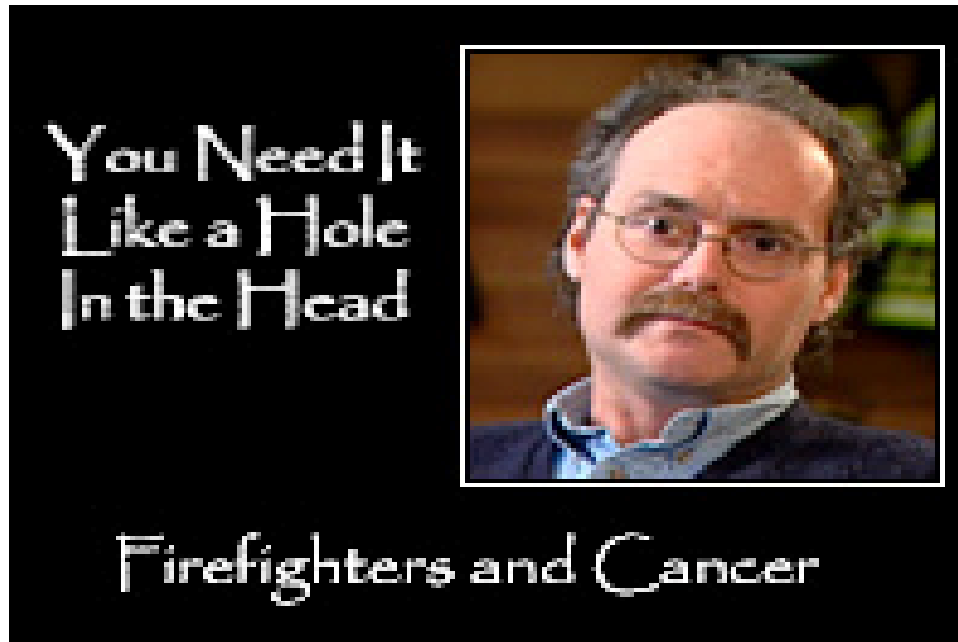
DOYLESTOWN PA.
BUCKS COUNTY
DISPATCHERS DID
NOT ANSWER THE
CALL UNTIL THE 7TH
RING AND THEN PUT
THE CALLER ON HOLD
FOR 27 SECONDS,
WHILE HER BED WAS
BURNING, AND SHE
COULD NOT ESCAPE
BECAUSE SHE HAD
MS.

- MIGHT THE LADY HAVE DIED ANY WAY?
- POSSIBLY?
- BUT BECAUSE ALL THE AVAILABLE EQUIPMENT, TRAINING AND PERSONNEL WERE NOT USED, THEY WILL NEVER KNOW



**WHY WE ARE
HERE TODAY**

**TO ENSURE THAT
EVERYONE GOES
HOME.**



MARK NOBLE STILL WANTED TO BE A FIREFIGHTER, EVEN AFTER GETTING BRAIN CANCER FROM THE JOB, TO HIM IT IS THE BEST JOB IN THE WORLD, HOWEVER HE SAID THAT IF HE COULD DO IT AGAIN, HE WOULD WEAR HIS MASK MORE, HOOK UP THE CLEAN AIR SYSTEM MORE, AND FIND OTHER WAYS TO PROTECT HIS CREW AND HIMSELF.

SMOKE AND HYDROGEN CYANIDE



HYDROGEN CYANIDE

- NEW FINDING THAT IN ALL STRUCTURE FIRES DURING THE BURNING AND OVERHAULL STAGES IN ADDITION TO CABON MONOXIDE (CO), HYDROGEN CYANIDE IS ALSO PRESENT.



HYDROGEN CYANIDE

- **LIKE CARBON MONOXIDE, HYDROGEN CYANIDE IS COLORLESS AND ODORLESS**

HYDROGEN CYANIDE

- **MATERIALS THAT ARE KNOWN TO GIVE OFF HYDROGEN CYANIDE WHEN THEY BURN**
- **WOOL, SILK, COTTON, NYLON, PLASTICS, POLYMERS, FOAM, MELAMINE, AND SYNTHETIC RUBBER**

HYDROGEN CYANIDE

- **THESE MATERIALS ARE FOUND IN COMMON HOUSEHOLD ITEMS**
- **MATTRESSES, CARPETING, UPHOLSTERED FURNITURE, BLANKETS, AND OTHERS**

HYDROGEN CYANIDE

- **IN 2004 1.838 BILLION POUNDS OF CYANIDE WAS PRODUCED IN THE UNITED STATES WITH THE MAJORITY BEING USED TO PRODUCE MATERIALS FOR BUILDING CONSTRUCTION AND INTERIOR FURNISHINGS**

WHY IS THIS INFORMATION IMPORTANT



HYDROGEN CYANIDE

- CYANIDE AND CARBON MONOXIDE ENHANCE THE TOXIC EFFECTS OF EACH OTHER

HYDROGEN CYANIDE

- **CYANIDE IS A HISTO-TOXIN**
- **MEANING IT CAUSES TOXICITY BY DEACTIVATING THE MECHANISM BY WHICH CELLS USE OXYGEN**

HYDROGEN CYANIDE

- **THE HEART AND BRAIN ARE ORGANS THAT RELY ON SUBSTANTIAL CONTINUOUS SUPPLY OF OXYGEN AND ARE THEREFORE AFFECTED BY CYANIDE POISONING**

SIGNS AND SYMPTOMS OF CYANIDE POISONING

- FAINTNESS
- FLUSHING
- ANXIETY
- EXCITEMENT
- PERSPIRATION
- VERTIGO
- HEADACHE
- DROWSINESS
- TACHYCARDIA
- CARDAIC
ARRHYTHMIA
- RESPIRATORY
DEPRESSION
- RESPIRATORY
ARREST
- CARDIOVASCULAR
COLLAPSE
- OTHERS

HYDROGEN CYANIDE

- **AFTER EXTENDED EXPOSURE TIMES AT 20 ppm, THE VICTIM MAY HAVE SYMPTOMS**
- **120-150 ppm MAY BE LIFE THREATING AFTER EXPOSURE OF 1/2 AN HOUR**
- **3000 ppm MAY DIRECTLY LEAD TO DEATH**

WHATS IN SMOKE

- **IRRITANTS**

HYDROCHLORIC ACID

SULFUR DIOXIDE

AMMONIA

WHATS IN SMOKE

- ASPHYXIATES

CARBON DIOXIDE

WHATS IN SMOKE

- TOXINS

HYDROGEN SULFIDE

HYDROGEN CYANIDE

HOW BAD IS IT

- Providence, RI, Mayor David Cicilline and Fire Chief David Costa recently released the recommendations of the Cyanide Task Force established in March after several Providence firefighters tested positive for cyanide poisoning in 2006
- <http://www.iafc.org/displayindustryarticle.cfm?articlenbr=31116>

The Task Force issued more than a dozen recommendations to limit the risk of cyanide poisoning in the future, some of which are already in place:

- A training program to ensure that firefighters are aware of the hazards posed by hydrogen cyanide at fires
- Enhanced compliance of existing mandatory mask regulations
- Decontamination: members should wash their turnout gear after every fire and shower and change clothes after every fire
- Education for the general public, the media and legislators about the dangers of smoldering and burning plastics

WHY THE TASK FORCE

- PROVIDENCE - The phone rang at 2:30 in the morning.
- "This is the Providence Fire Department," Patricia Baker heard on the line. She started screaming.

- Her husband of 31 years, Firefighter Kenneth E. Baker, had left for work hours earlier for an overnight shift. Fire Chief David Costa was talking to her, saying that her husband had been hurt.
- "I was screaming, 'Is he burned? Is he burned?' He said 'No, but he's not doing good.' "
- "I went crazy," Patricia Baker recalled later.

- Kenneth Baker, age 50, had worked at two house fires that night, going inside at one house and then manning the pump at the second fire. He collapsed beside a fire engine and was rushed to the hospital by other firefighters who fought to restart his heart.

- But the danger that had sent her 50-year-old husband into cardiac arrest on March 24 was caused by something never considered. Baker and several other Providence firefighters had high levels of deadly cyanide in their bloodstream.
- The chief of the Providence Fire Department had never heard of such a thing.
- He wasn't alone.
- **HYDROGEN CYANIDE** is the killer that few in the fire service seem to know about.

RESCUE 9-1-1 ESP #504

- **40 YEAR OLD FIRE
CAPTAIN GILL MESSER
RESPONDS TO A
SUPERMARKET FIRE ON
JULY 26, 1991 IN KILGORE
TEXAS. AFTER THE FIRE IS
EXTINGUISHED HE HAS A
HEART ATTACK.**

RESCUE 9-1-1 ESP #504

- **WHAT WENT WRONG HERE?**
- **WHAT WERE THE PERSONAL FACTORS THAT CAUSED THE HEART ATTACK SUCH AS SMOKING, IMPROPER DIET, AGE, GENDER.**

RESCUE 9-1-1 ESP 504

- **LOOK FOR WHAT EQUIPMENT WAS USED AND WAS NOT USED**
- **LACK OF P.P.E. INCLUDING LACK OF SCBA DURING FIRE OPERATIONS AND OVER HAUL**

RESCUE 9-1-1 ESP #504

- **LOOK FOR THE PROBLEMS ON THE FIRE GROUND**
- **LACK OF EFFICIENT REHAB AND MEDICAL MONITORING**

WHAT WOULD YOU DO

WHILE VIEWING THIS VIDEO LOOK
FOR WHAT WHEN WRONG AND WHAT
WENT RIGHT

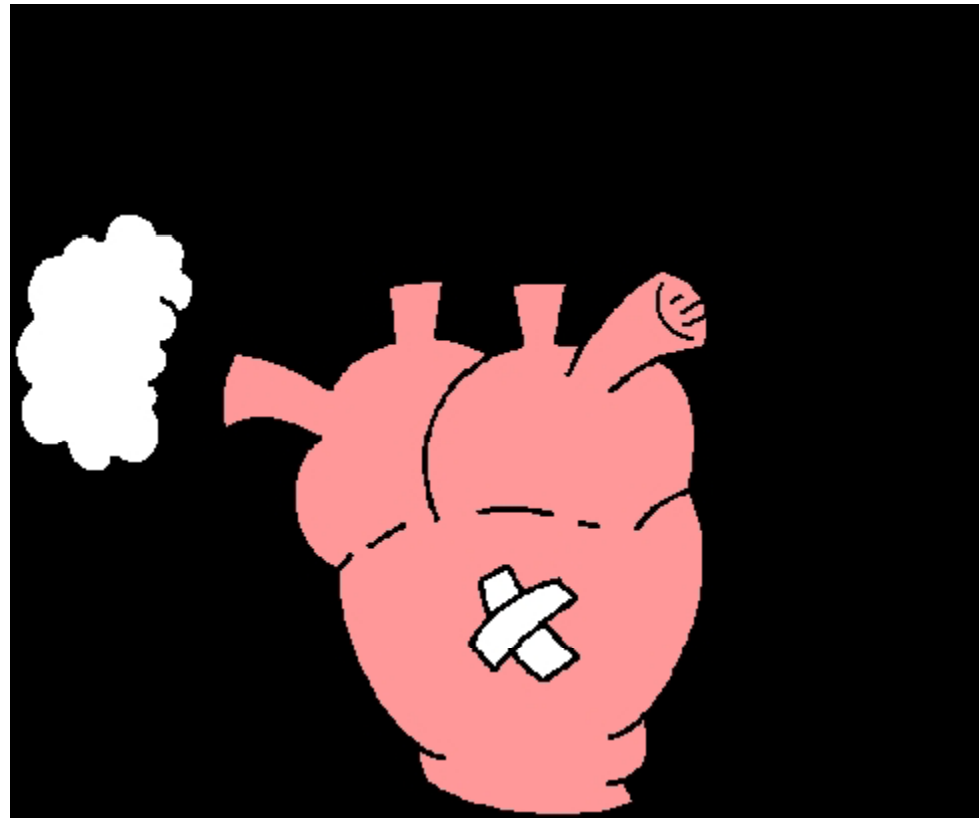
HOW WOULD YOU HANDLE THE:

FIRE,

REHAB, &

HEART ATTACK?

NOW THE VIDEO



REFERENCES

- Firefighter heart attack you tube video:
<http://www.youtube.com/watch?v=boNBAq7ltrU>
- American Heart Association:
<http://www.americanheart.org/presenter.jhtml?identifier=1200000>
- Fire Fighter Fatality Investigation and Prevention Program:
<http://www.cdc.gov/niosh/fire/>
- Recipes for people with heart problems produced by the American Heart Association:
<http://www.deliciousdecisions.org/>
- Fire Fighter Fatality Investigation and Prevention Program:
<http://www.cdc.gov/niosh/fire/>
- <http://www.iafc.org/displayindustryarticle.cfm?articlenbr=31116>

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- <http://www.aristatek.com/newsletter/0604April/TechSpeak.aspx>
- <http://www.firerehab.com/news/283219/>
- [http://cms.firehouse.com/web/online/Hazardous-Materials/Hydrogen-Cyanide--Its-Not-Just-a-HazMat-Anymore/18\\$50969](http://cms.firehouse.com/web/online/Hazardous-Materials/Hydrogen-Cyanide--Its-Not-Just-a-HazMat-Anymore/18$50969)
- Riddle, Ken, Alcorta, Richard. M.D.; [Smoke Inhalation and Hydrogen Cyanide](#), Jems Communication, San Diego CA.
- <http://www.firehouse.com/interactive/calendar/featured/PFDCyanideReport.pdf>
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- MILKOVITS, AMANDA, Task force urges firefighting precautions, May 31, 2006, The Providence Journal Co
- <http://www.providenceri.com/press/article.php?id=104>
- <http://www.providenceri.com/press/article.php?id=82>
- MILKOVITS, AMANDA, Details of cyanide poisoning of R.I. firefighters, *Copyright © 2007 LexisNexis*