

Milestones on the way to

Hazardous Materials Emergency Response Progress

1870s to 1982

*Presentation to
Wisconsin Association of Hazardous Materials Responders
February 27, 2009*

Origins of Hazmat emergencies

1860-1870s

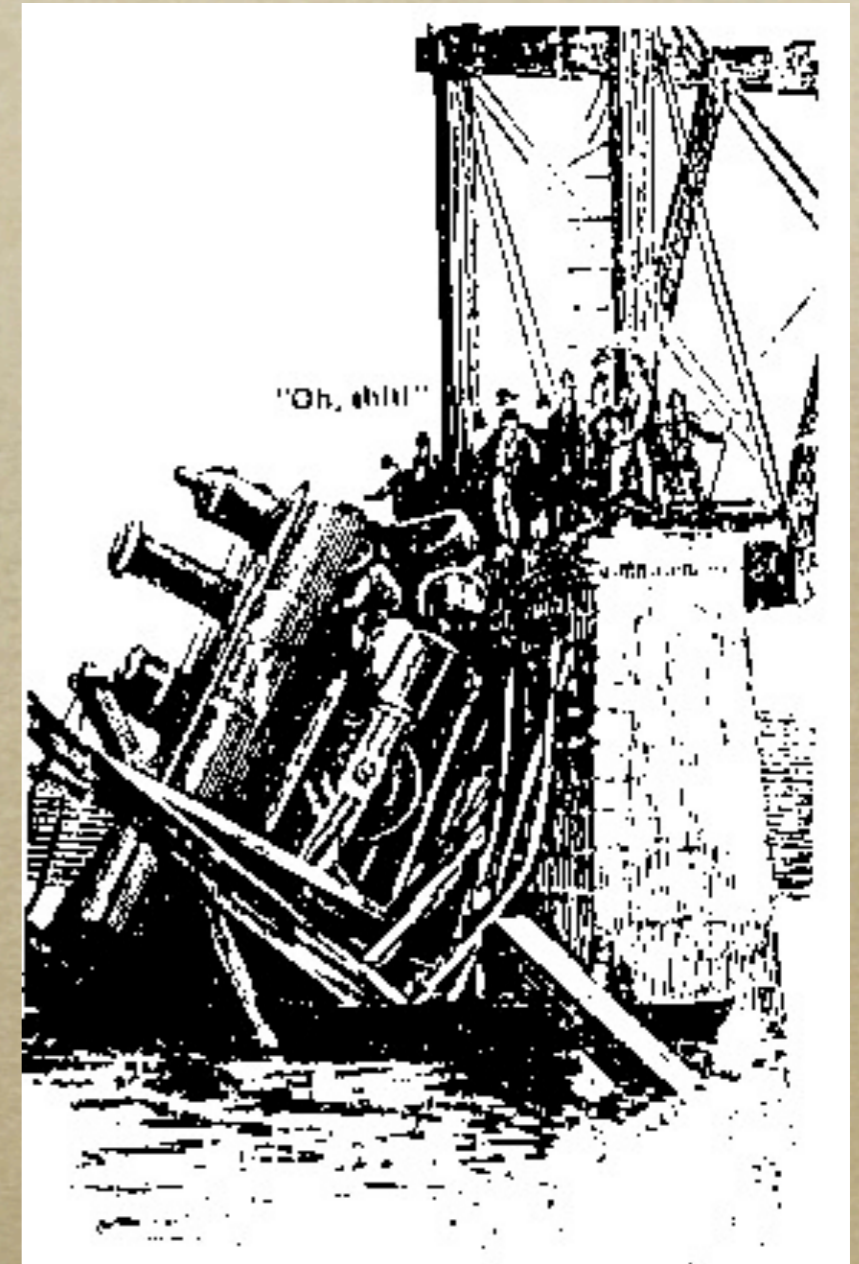
growth of black powder uses in

- *wars*
- *construction of canals, railroads, mining, farming, excavation*
- *invention of dynamite 1866*
- *Brits institute regulations 1875*

HM commerce grew

1880-1890

- *New products like petroleum entered commerce*
- *more moved via rail through populated communities*
- *Federal government started regulating interstate commerce (ICC)*
- *accidents started to generate concerns*



HM, accidents proliferate

1900 - 1910

- *Expanding markets for chlorine, solvents, gases, dynamite*
- *1902 fatal naphtha accident*
- *1903 Crestline explosion*
- *note media coverage, who handled wreck*

DYNAMITE SHAKES A TOWN
Two Cars of It Explode and All Crestline, Ohio, Rocks.
Wall Fall In—Panics in Churches—350 Cars Smashed in Pennsylvania Yards.
CRESTLINE, Ohio, Nov. 1.—Crestline and vicinity was thrown into a panic to-night by a terrible explosion at 8 o'clock. Many

Hundreds of Pennsylvania employes are at work searching the ruins for the dead or injured. The entire west yard of the road is a wreck. Officials of the railroad have said that there are not less than 350 cars smashed.

HM Safety gets attention

1907

- *Railroads established Bureau for the Safe Transportation of Explosives*
- *Bureau made rules for shipping dangerous goods*
- *Bureau gave emergency advice to RR, local responders*



World views

1890s - 1930s

- *Shippers: Turn over shipments and responsibility for safe movement to carriers*
- *Carriers: accidents are on their property, their problem*
- *Local responders: Carriers' problem*

Things started changing

1920-1940

- *Road transport gained traffic foothold*
- *Dangerous goods started moving in trucks, accidents happening on public property relied on local responders to handle.*
- *Congress regulated truck safety in 1935*
- *ICC used BofE classification, packaging, labeling, shipping, container rules*



WW II changed a lot

1940s

- *wartime HM shipments expanded, some bad accidents*
- *cargo aircraft became feasible*
- *set stage for 50's boom*
- *1947 Texas City disaster*



Source=IAFF Local 1259

Burgeoning HM commerce

1950s

- *Chemical, petroleum, gas, nuclear industries took off*
- *HM shipments grew in number, variety, size*
- *Motor, Air carriers became hostile to railroad HM regulation dominance*



HM Economies of scale

1960s



- *Shippers scaled up risks with jumbo rail cars, heavier trucks, larger new containers*
- *accident risks grew*



HM Responders needs escalated

Late '60s

- *accidents started overwhelming local responder's capabilities*
- *Chemtrec conceived*
- *Congress passed DoT Act
New regulatory era started*
- *NTSB (watchdog) got into the picture*



Let's get serious

1970

- *Meidl published first HM books*
- *NTSB issued HM reports*
- *Chemtrec opened doors*
- *Crescent City happened*



HM Responders get attention

1971

- *NTSB internal risk study findings (responder risk = 10,000/hr > others)*
- *Houston Texas accident*
- *TV real time accident coverage*



Getting together

1972

- *Work started on ERG at DoT*
- *East St Louis explosion*
- *PanAm Boston crash*
- *Brought together responders, shippers, regulators, carriers, legislators, employees*



New challenges

1973

- *Federal Water Pollution Control Act established NRC*
- *Trade press picked up issues*
- *Brannigan's "what's better" challenge*
- *starting to put pieces together*



Behind the scenes work

1974

- *HM Transportation Act (93-633) cast HM regulation in risk framework, shifted risk acceptance decision to DoT*
- *NFPA published 1-74 bulletin*
- *Fire Academy created*
- *Montgomery College course*



New rules and tools

1975

- *affected parties meeting*
- *US yielded to European regulations*
- *NFPA published DECIDE*
- *Published HME /GEBMO*



Paradigm shifting

1976

- *\$200m Tank Car head shields retrofit*
- *Houston freeway Ammonia spill*
- *AAR started planning training with new tools around then (as I recall)*
- *NTSB Miss Dig catches on*



Working on details

1977

- *Started pushing HM emergency behavior prediction challenge*
- *working behind scenes with NFPA, NFA, DOT, IAFC, NFPA, FRA, OHM, etc*
- *Nacogdoches accident / explosion*



Prediction front and center

1978

- *Waverly TN happened*
- *Youngstown FL happened*
- *Los Alfalques Spain happened*



www3.gendisasters.com

Lots of helpers now

Mid-late 70s - early 80s

- *HM became attractive rice bowl*
- *More govies got into HM act like SEPCs, EPA, OSHA, FEMA, now DHS*
- *So did “experts” like consultants, academics, politicians, media, trainers*
- *An then - Federal money in '95*



\$104

On to something new

- *By 1982, the parties were all talking to each other*
- *We had changed the game*
- *Time to let it go*
- *It was a good run.*



Still work to be done

- *For a little while responder fatalities stopped but then started again*
- *New generations need to learn old lessons*
- *How to pass on needed smarts?*
- *New willful incidents: same lessons?*

Appreciate the contributors

Major players with pioneering HM response role included

- *Warren Isman with the IAFC*
- *Martin Grimes and Tony O'Neil of NFPA*
- *Stan Hoffman of Union Carbide*
- *John Zercher of Chemtrec*
- *Frank Brannigan of Montgomery College*
- *Bill Haddon of the Insurance Institute for Highway Safety*
- *Bob Graziano of the Bureau of Explosives*
- *Bill Black of the Federal Railroad Administration*
- *Don Morrison, Montgomery College student*
- *Mike Hildebrand - coworker at NTSB*
- *Tom Hughes of the Fire Academy*
- *Charlie Wright now with Union Pacific*
- *Henry Wakeland of the NTSB*
- *Jim Echols of ALPA*
- *Warren Magnuson - US Senator who support cause*

Thanks for Listening

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Web Sites

<http://www.iprr.org/> (research and analysis support site)

<http://www.ludwigbenner.org> (personal publications)

<http://www.investigationcatalyst.com/> (investigation software)