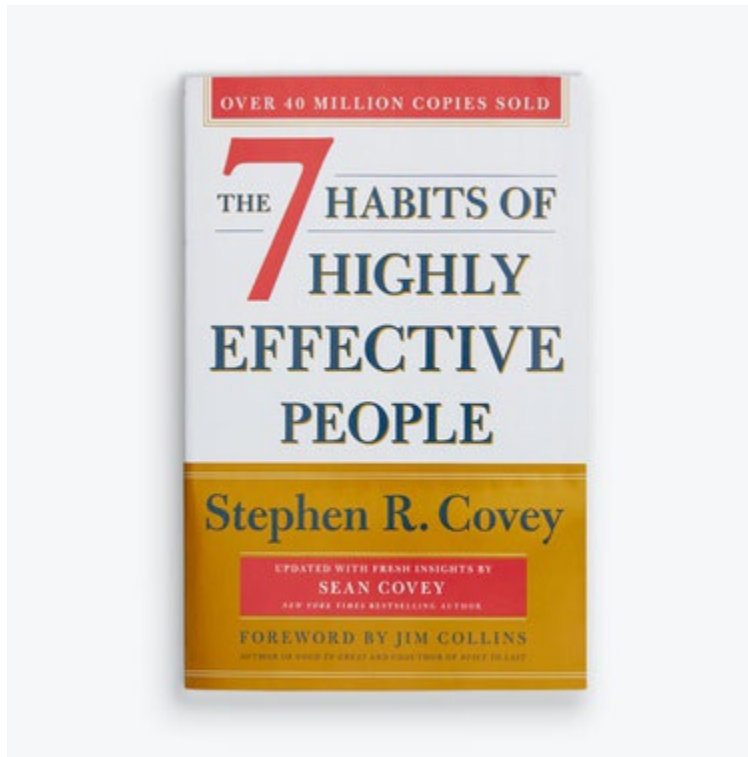


Laboratory Preparedness for Environmental/Occupational Disasters: A Private Laboratory's Experience

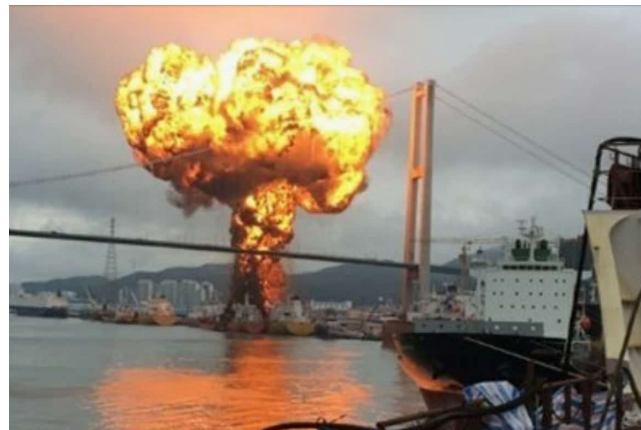


Disclosures

- I am a salaried employee of NMS Labs
- I am the proprietor of Toxicology Legal Consultants
- No other disclosures



Habit 2: Start with the end in mind



<https://www.freightwaves.com/news/chemical-tanker-explosion-sends-fireball-roaring-into-sky-warning-graphic-video-and-images> - accessed 3/20/2023

https://en.wikipedia.org/wiki/2023_Ohio_train_derailment - accessed 3/20/2023

<https://www.washingtonpost.com/dc-md-va/2023/03/04/tanker-explosion-freerick-county-md/> - accessed 3/20/2023

How does a laboratory prepare for an environmental/occupational disaster?



1. Analytically - Have validated methods and be agile in development; highly trained staff; willingness to help
2. Practically – A lab can't be prepared



How does a laboratory prepare for an environmental/occupational disaster?



1. Analytically - Have validated methods or be agile in development; highly trained staff; willingness to help
2. Practically – A lab can't be prepared
3. It's easy to say “no,” but that's not why labs exist

Deep Water Horizon - 2010

>47,000 worked on the response to the spill



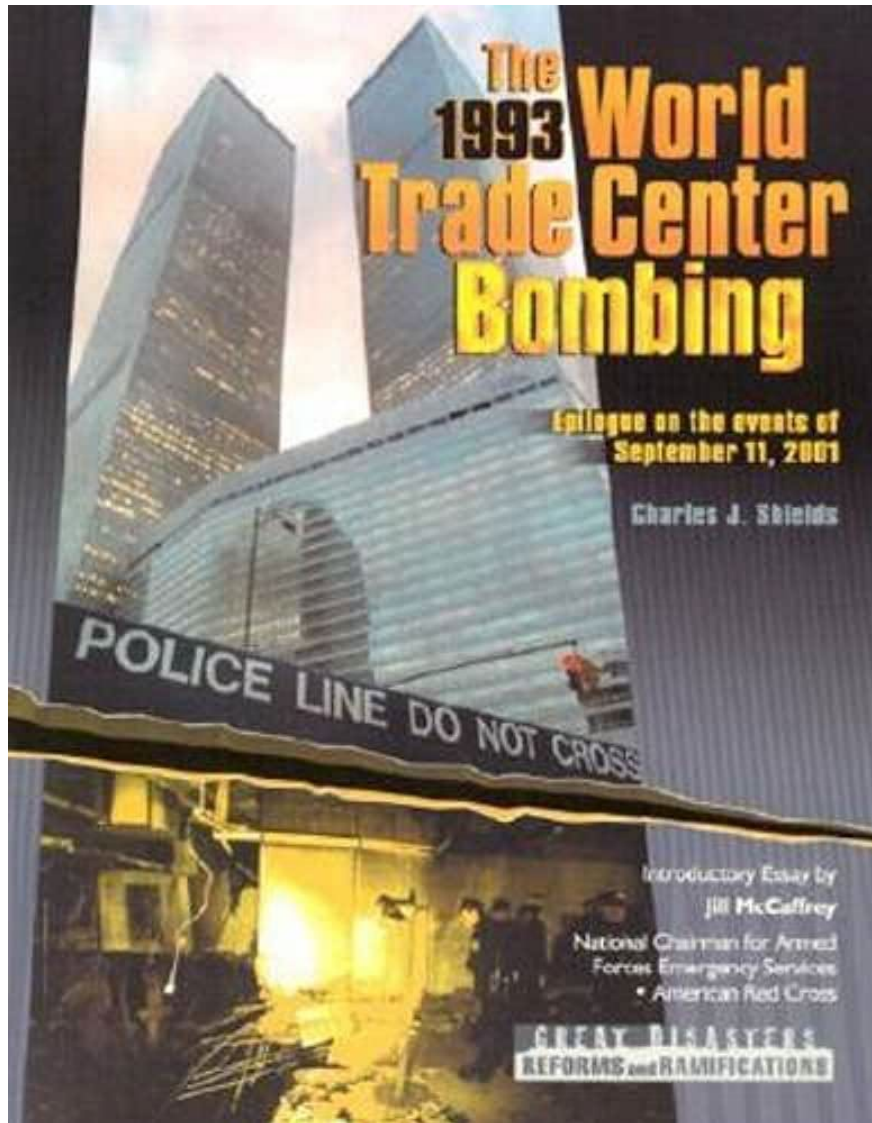
<https://www.motherjones.com/environment/2019/04/deepwater-horizon-bp-oil-spill/>

All accessed 3/20/2023

<https://www.nytimes.com/2014/09/03/business/energy-environment/halliburton-to-pay-1-1-billion-to-settle-damages-in-gulf-of-mexico-oil-spill.html>

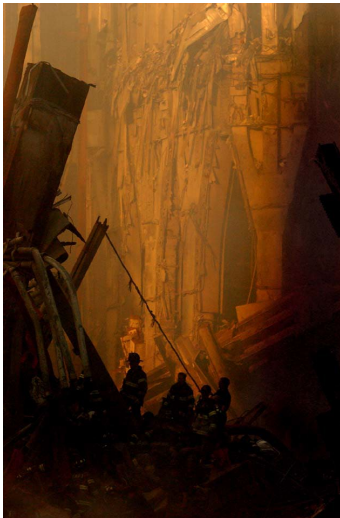
<https://insideclimatenews.org/news/22062021/gulf-of-mexico-deepwater-horizon-safety-regulation-ecocide/>

February 26, 1993



- 100s of samples
- Volatile organics

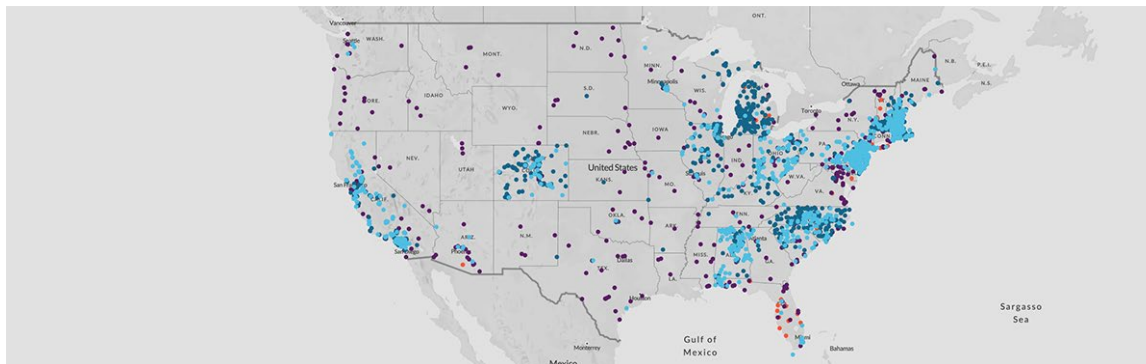
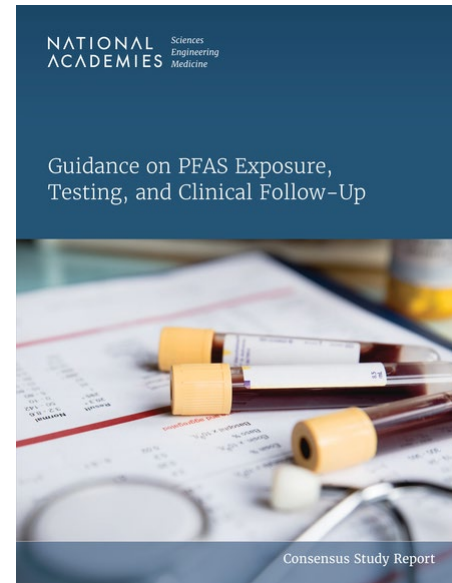
September 11, 2001 and the months after



11,000 samples for:

- Mercury
- Beryllium
- PCBs

PFAS – An Ongoing Concern



- >9000 compounds
- Can't look for all in humans
- Sum 9
- CLIA requirement?
- 1000s performed to date

March 17, 2019 – ITC Deer Park, TX



- >1000 Benzene/Phenol analyses
- Right testing?



2018 and 2021 - Brodifacoum

- 214 affected individuals
- 7 deaths
- Multiple samples per person
- Analyses guided treatment

An Outbreak of Brodifacoum-laced Synthetic Cannabinoids in the United States –

Analytical and Practical Concerns for the Toxicology Laboratory



Robert A. Middleberg
NMS Labs
Willow Grove, PA

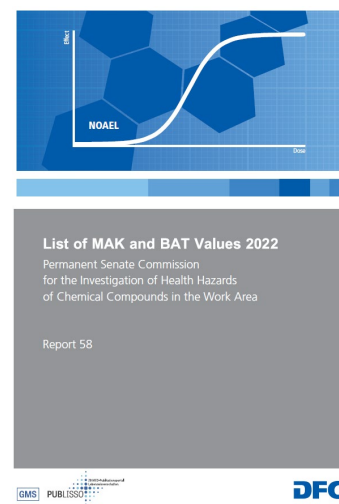
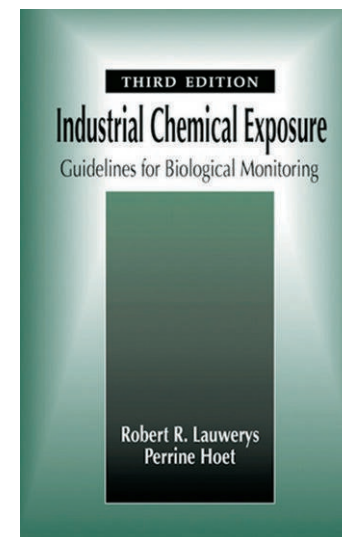
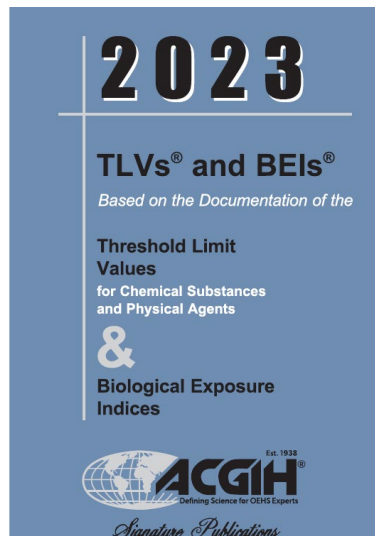
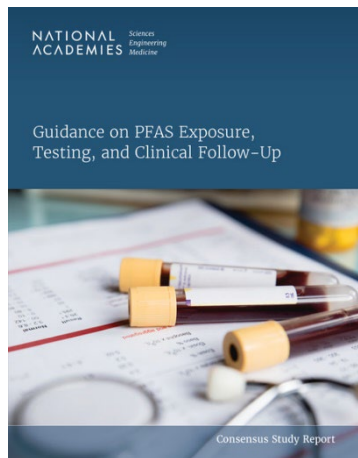
Synthetic Cannabinoids Adulterated With Brodifacoum — Part II: The Florida Experience



Robert A. Middleberg, Ph.D., F-ABFT, DABCC(TC), NMS Labs
Justin Arnold, DO, MPH, FACEP, FACMT, FL Poison Information Center, Tampa
Alexandra Funk, PharmD, DABAT, FL Poison Information Center, Tampa

Major Issues

- 182 million CAS registered chemicals
- Limits to the science, e.g., chlorine
- Lack of coordination/logistics – who's in charge?
 - logistics
- Is a lab a lab
 - CLIA
- What is normal?



Major Issues

- 182 million CAS registered chemicals
- Limits to the science, e.g., chlorine
 - Common metabolites
 - Biomarkers of exposure/effect
- Lack of coordination – who's in charge?
 - Logistics
- Is a lab a lab
 - CLIA
- What is normal?
- Clinical Actions?
- Who's going to pay for testing?

Conclusions

- Somewhere in the world, an environmental/occupational issue arises every day
- Labs can't have tests for all possibilities
- Labs have to be able to develop tests quickly and be agile
- Joint efforts are necessary
- What defines a true emergency?