

Oil in the Bay: 15 years after the *Athos I* spill
A post-workshop summary
Delaware Estuary Science and Environmental Summit
January 28, 2019
Cape May, New Jersey

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Special thanks to



Organizers

Ann Faulds (Pennsylvania Sea Grant)
Emily Maung-Douglass (Louisiana Sea Grant)
Christopher Petrone (Delaware Sea Grant)
Peter Rowe (New Jersey Sea Grant)

Abstract

The *Athos I* oil spill occurred in November 2004 after the tanker, en route to a New Jersey refinery, struck a submerged nine-ton anchor in Delaware River. The collision resulted in more than 260,000 gallons of heavy crude oil into the Delaware River and Bay resulting in clean-up expenses totaling \$143M. The impacts were costly to the tri-state area – both ecologically and economically. Shoreline oiling spanned three states, bird mortality estimates totaled over 11,500, commercial traffic in the river halted, and a nuclear power plant was temporarily closed.

What would happen if the *Athos* spill happened today? This special session included both invited talks and a panel discussion to present a retrospective including research gained over the years following the spill, and how to improve our capacity to respond to and prevent future spills in the Delaware estuary.*

* Due to the effects of the federal government shutdown (December 22, 2018-January 25, 2019), several confirmed presenters and panelists from federal and state agencies were unable to participate in this special session.

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Agenda

Time	Speaker	Affiliation	Topic
3:15 PM	Emily Maung-Douglass	Louisiana Sea Grant	Welcome and introduction to the session
3:25 PM	Martha Maxwell Doyle	Barnegat Bay Partnership	Needs arising from the <i>Athos I</i> incident
3:35 PM	Rich Gaudiosi	Delaware Bay & River Cooperative (DBRC)	Responding to oil spills in Delaware Bay
3:45 PM	Jeff Wakefield	Cardno	Informing spill response in Delaware Bay with plans formed elsewhere
3:55 PM	Michel Boufadel*	New Jersey Institute of Technology	Impact of the physical form of oil on its transport
4:05 PM	Question & Answer - Panel discussion with State & Federal panelists Moderators: Ann Faulds (Pennsylvania Sea Grant) & Peter Rowe (New Jersey Sea Grant), Christopher Petrone (Delaware Sea Grant)		
	Bob VanFossen		New Jersey Dept. of Environmental Protection
	Martha Maxwell Doyle		Barnegat Bay Partnership
	Rich Gaudiosi		Delaware Bay & River Cooperative
	Jeff Wakefield		Cardno
	Michel Boufadel**		New Jersey Institute of Technology
5:00 PM	Poster Session		

** Due to unforeseen circumstances, Dr. Michel Boufadel was unable to attend.
Mr. Wen Ji presented on behalf of Dr. Boufadel.

Session presentation notes

Oil spills & Sea Grant as a resource

Emily Maung-Douglass, Louisiana Sea Grant

- Potential issues due to oil spills:

Fishery closures	Health concerns	Impacts to wildlife & environment
Seafood safety	*Myth versus fact	Impacts to tourism & economy
*Knowledge gaps	Mistrust	Altered way of life

- Content and data: <https://data.gulfresearchinitiative.org>
- Gulf of Mexico Sea Grant offices have collaborative team of Oil Spill Science Specialists:
<http://gulfseagrant.org/oilspilloutreach>
 - (26) 8-page documents, in lay-language, covering a wide variety topics, using published data and research, vetted through oil spill scientists and educators
 - Numerous 1-page documents also available
 - In-person/live-streamed seminars are archived on the website
 - Upcoming workshop: Mid-Atlantic Oil Spill – Are we ready? March 29, 2019 in Virginia Beach, VA
- *Athos* serves as a jumping off point to discuss oil spills
 - **Delaware River and Bay Oil Spill Advisory Committee (DBROSAC) Report**
Summary of December 2010 Recommendations
https://www.state.nj.us/drbc/library/documents/DRBOSAC_final-report122010.pdf
- Shaking hands at the time of an oil spill is too late to meet partners in oil spill recovery

15 Years After the *Athos I* Incident: Gaps and Paths Forward

Martha Maxwell Doyle, Barnegat Bay Partnership

- Over 2,000 people involved in *Athos I* response
- Seven large oil spills in Delaware River history; approximately 2,000,000 gallons total
- Lessons Learned for Stakeholders
 - Understanding Oil Spill Response Incident Command System (ICS)
 - National Estuarine Program (NEP) Role
 - Trusted source of info and leadership
 - Info clearinghouse
 - Local scientific and geographic knowledge
 - Sector Delaware Bay Area Committee

Session presentation notes – M. Maxwell Doyle continued...

- Outcomes
 - Delaware River Oil Spill Protection Act of 2005, which led to the Coast Guard and Maritime Transportation Act of 2006, and the formation of the Delaware River and Bay Oil Spill Advisory Committee (DRBOSAC)
 - Charge: Develop recommendations for improving oil spill protection, response, recovery
- Key Science and Technical Advisory Committee (STAC) observations
 - The area was not sufficiently prepared for this type of event and the type of oil spilled
 - Response and recovery efforts focused attention on surface oil
 - Local scientists with expert knowledge were not engaged
 - Mitigation for injuries of the spill were largely exported
 - Long-term monitoring

DBRC *Athos I* Response

Rich Gaudiosi, Delaware Bay and River Cooperative (DBRC)

- DBRC was two separate cooperatives until 1982
- DBRC is a not-for-profit corporation
- Responsible for area Betsy Ross Bridge to offshore Atlantic
- *Athos I* oil properties
 - 263,000 gallons
 - Slightly buoyant
 - Very viscous
 - Very sticky
 - Needs heat to move it
 - High asphaltene content
 - Weathers slowly
 - Forms tar balls
- 280 miles of shoreline impacted
- Response actions
 - Designed to keep oil out of sensitive areas
 - Gear for skimming
 - 28,000 feet of boom surrounded Pea Patch Island/Fort Delaware
- The Salem Nuclear Power Plant (Salem County, NJ) was shut down as a protective measure (costs \$2M per day)
- Much of the submerged oil was not recovered; too difficult to locate and capture
- Very difficult oil spill for the entire response team (see reasons above)

Session presentation notes – continued...

What has happened since *Athos* and how it will help us tomorrow?

Jeff Wakefield, Cardno

- Natural Resource Damage Assessment (NRDA)
 - Assures the public experiences no net loss as the result of release-related injuries to natural resources
 - Implements the Polluter Pays Principle for the environment
 - Compensatory not punitive
 - Compensation is in the form of ecology restoration projects
 - Is designed to be socially efficient
- Lessons learned since *Athos*
 - NRDA for harvested populations
 - Spills have multiple effects
 - Compensatory restoration
 - Can regional restoration plans be used to develop a pool of compensatory restoration projects so we are not searching out projects every time?
 - Can responsible parties (RPs) “team up” to implement projects larger than any individual RP requires in order to gain scales of economy?
 - Can we establish NRDA credit banks that are sufficiently liquid to work in the mid-Atlantic?
 - What can we do to reduce NEPA burdens?

Oil particle aggregates

Wen Ji (for Michel Boufadel), New Jersey Institute of Technology

- Developed a model based on surface attachment: The A-Drop Model
 - Clay particles attaching to oil droplet
- Packing on the oil droplet increases with particle concentration
- Particles can penetrate oil droplets, and exist on the inside
 - This causes fragmentation of oil droplets
- Oil droplet size decreases with time
- Could particles be used as a countermeasure for oil spill mitigation, i.e. act as a “dispersant”

Panel discussion notes

An ‘*’ indicates a comment was made in response by an attendee in the audience.

What are the cumulative impacts of smaller spills in Delaware River/Bay? How do we manage all of the spills instead of one by one; the build up of hydrocarbons?

- Oil spills are event-driven and on a prescribed timeline. Damage assessments are done in the current environment.
- Is it possible to clean up the cumulative effects?
 - Is it hard to assess the cumulative effects?
- Funding and (research) in response (can be difficult) because events are episodic.*

In regards to NRDA [Natural Resource Damage Assessment], Tinicum Island still has oil and big populations of freshwater mussels.

- Animals are driver and priority of spills. If, in NOAA’s opinion, mussels were an issue, there would have been a claim
- Oil spill preparedness (monitoring, etc.) and response has been added to PDE CCMP [Comprehensive Conservation & Management Plan], but there is no funding for this work.*

Can the funding export be corrected?

- It is difficult because the NRDA wording clarifies restoration. Penalty funds are harder to keep local.
- It was felt that there were no viable projects to compensate. PDE’s suggestions went unfunded.*
- The *Athos* owner was found to be not responsible. They did what they needed to do. They hit something that wasn’t their fault. That impacts the NRDA, etc. response. Further complicated by the fact that it was difficult to find the submerged oil.
- Also complicated because of the involvement of three states (PA, NJ, DE).

It’s been 15 years, technology has improved, how has response improved?

- Picking up oil is picking up oil. It’s a very labored process. NJ is well-practiced. Partners are already known. We’re not shaking hands for the first time at the spill.
- The Coast Guard has put out guidance for heavy oil recovery. There are now several U.S. companies that are prepared for heavy oil. There have been advancements in dealing with this kind of spill.
- *Athos* brought attention to water intakes, and warnings are issued to water companies. It was difficult to keep volunteers safe and get them where they were needed most.
- The Area Contingency Plan (ACP) includes volunteer coordination. DEBROSAC [Delaware Bay & River Oil Spill Advisory Committee] report calls for beach cleanup of trash/debris as a pre-spill measure to help oil spill recovery.

Panel discussion notes continued...

- There are known naturally occurring trash and (natural) debris collection points in the river. Those can be cleaned before a spill.
- An improved model exists and can be run in an emergency to determine where oil will move. There are a lot of assumptions in that model.*

Are there new risks/challenges with deepening of the channel?

- There could be a risk with increased traffic and larger container ships (more fuel). There is a finite number of anchorages, so demand will go up.
- We've tested models and boom deployment to see how effective both are.

Are there geographic response strategies in the local ACP [Area Contingency Plan]?

- Yes. We have ten zones setup.
- We took an extra step in the GRP to include rail spills. Identified ~52 tributary crossings that would have to be contained before it made it to the mainstem [of Delaware River/Bay].

Stakeholders want to help, but they are impatient and busy. How do you increase the understanding that oil spill cleanup takes time?

- *Athos* was a learning experience. The public does need info, so utilizing social media, etc. can help.
- We recognized we needed better stakeholder notification. After recent chemical spill in NJ, held public meetings along the NJ baycoast.
- Coast Guard has the JIC [Joint Incident Command] whose job is to communicate with stakeholders (social media, etc.).
- Many of the Coast Guard commanders worked the Gulf spill. One of their big takeaways was public engagement.
- Communications are also drilled into the state emergency managers.

Suggestions/Recommendations for future work related to Delaware estuary oil spills

- Continued support of oil spill:
 - Research
 - Response
 - Outreach
 - Education
 - Webinars
 - Non-emergency response personnel participating in full-scale and table top oil spill exercises
 - Making sure state-of-the-art techniques are employed with future spills; how to better locate and capture submerged oil
 - Finding strategies to keep funding for restoration from penalty fines local
 - How to address the unlimited need for pre-spill debris clean-up
 - Improved distribution and awareness of existing response plans, through social media, listservs, etc.
 - Could utilize 15-year anniversary (Nov 26, 2004) as vehicle for sharing resources/building awareness
 - Formulation of missing response plans
 - Assess and address the cumulative watershed effects of “non-point” petroleum inputs
 - Meetings of tri-state state agencies, NERRs, Sea Grants, local NGOs
 - Discuss current abilities and goals to help stakeholders and ability to help mitigate damage/disruption in event of a spill
- Examples:
- Early alerting of water users
 - Cuing up potential restoration projects before the spill
 - How to productively manage volunteers so they can contribute to clean-up efforts