

## Oil Spill Science and Alternative Response Measures with Dr. Kenneth Lee \_ 2020

[Oil Spill Science and Alternative Response Measures with Dr. Kenneth Lee - YouTube](#)

### A BRIEF ANALYSIS

Minute 00:06    **The three big questions:**

- *What happens to oil that is spilled in the environment?*
- *What are the environmental effects of oil spills?*
- *What can we do to clean up oil spills, should they occur, to protect our marine environment?*

The **intelligent** answer to the first two questions is “*Who cares?*”. Everybody already knows the answers. The marine environment and related ecosystems are poisoned with spilled oil, this is a bad thing, and the only way to make it less bad is to clean up the spilled oil by quickly recovering the oil from the contaminated marine environment (*removing it from the water and safely storing it*). That’s it. Knowing what happened to the environment makes zero difference to protecting the environment from future oil spills. It’s all a waste of time and money that should be invested in learning how to clean up oil spills by recovering the spilled oil (removing it from the water and ice). The first two *big* questions have been answered and it only took us 35 seconds and no money, not 35 years and *\$Billions*. Science? Follow the money ([document available](#)).

Of course, there is also a **lucrative** answer to the first two questions, and that answer is “*Let’s pay scientists to try to find out*”. Canadian taxpayers have wasted literally *hundreds of \$millions* over the last 50 years funding the quest by the well-paid oil spill scientists, working in their expensive laboratories, who are looking for answers that don’t matter. For example, here is a facility which is a completely unnecessary vanity project costing approximately \$100 million today <https://www.ourcommons.ca/content/Committee/421/FINA/Brief/BR8126449/br-external/C-Core-e.pdf> . Ottawa already owns an excellent test tank which they offered to rent to Northern Spill Technology (NST), at an economical rate, for oil spill research using real oils: <https://nrc.canada.ca/en/research-development/nrc-facilities/ice-tank-21-m-research-facility> . Canada cannot afford vanity projects performing even more 50-year-old research on long-proven-failed ideas like ARMs (below).

Dr Lee then proceeds to try and answer question number three. This question is more challenging because the entire global oil spill mitigation industry has been trying, and failing, to clean up marine oil spills for the last 50 years, ever since oil spill mitigation attempts began in the 1970s after the Santa Barbara offshore oil blowout in California. Decades ago, the oil industry and its helpers in academia and government gave up trying to clean up marine/Arctic oil spills (recover

the oil from the water). It was too challenging for them so they just switched to making the oil “go away” by developing alternative response measures (ARMs). These ARMs (dispersants and in-situ burning) quickly send the oil down into the water column and, temporarily, up into the atmosphere. Dr Robert Bea calls both these ARMs “primitive”, and so they are. Humans first started using open fires one million years ago; in-situ burning is just a big open fire. Both ARMs can be seen here: [COOGER Arctic - YouTube](#) . Here is Dr Bea <https://engineering.berkeley.edu/robert-bea/> .

Fortunately, there is today a new *non-toxic* option. Marine and Arctic environments that have been contaminated by spilled oil can now be cleaned up (i.e., the spilled oil can be recovered and safely stored). Seaworthy, Polar Ice Class oil spill recovery vessels created by Northern Spill Technology Inc (NST) can remove the spilled oil from the water and ice <https://www.navalreview.ca/2022/12/the-case-for-a-polar-multifunctional-security-vessel/> .

#### Minute 00:31 **Alternative Response Measures (ARMs)\_Part One:**

We learned about oil spill ARMs on page 1, above. Canada is global ground zero for investing in these failed and toxic tools. The pie chart on page 6 demonstrates the extent of their failure. For decades, these ARMs have been promoted as effective marine/Arctic oil spill mitigation tools by the oil industry and its helpers in academia and government, all the while knowing that these tools have always failed. **Hundreds of \$Billions** have been wasted on them; they have done immeasurable harm. Examples can be seen here at minute 28:19: <https://www.cultureunplugged.com/documentary/watch-online/play/6733/Profit--Pollution-and-Deception---BP-and-the-Oil-Spill> .

#### Minute 15:54 **Royal Society of Canada Expert Panel Report: The Behaviour and Environmental Impacts of Crude Oil Released into Aqueous Environments:**

Dr Kenneth Lee is proud that he chaired this prestigious panel. He does not mention that some prestigious Expert Panel members were highly critical of the ideas that Dr Lee has based his entire career on (viewing is now forbidden): [Access Denied | The Royal Society of Canada \(rsc-src.ca\)](#) . Pertinent details of the report can be seen in the document **COAC Reply to Minister Leblanc** page 4 ([this document is available for viewing](#)).

#### Minute 16:18 **\$45,500,000 Multi-Partner Research Initiative funded by Ottawa:**

MPRI, led by Dr Lee, spent almost \$40M on 50-year-old failed ideas. See the following available documents:

- *Concordia\_ A letter to Concordia University*
- *Concordia University and MPRI*
- Woods Hole Text PDF WHOI Webinar \_ April, 2020
- Woods Hole \_ A Decade after Deepwater \_ Changing Seas  
([contact Northern Spill Technology Inc for viewing](#))

Minute 16:50 **Let's Have Lots of Global Conferences So We Can Continue Exchanging 50-Year-Old Failed Ideas:**

We do not need mountains of "information" to clean up an oil spill. We just need tools that actually work. However, the oil spill scientists must supply the public, and each other, with endless streams of irrelevant information in order to secure research grants and to write the peer-reviewed papers required to keep their job. Peer review fallacy maintains the game; when everybody makes a living off failed ideas, peer review blocks change. All we actually need to do is remove the spilled oil from the water and the ice with very big tools that actually work in the very big oil spill environment (the big ocean and the big Arctic). Build the big tools (oil spill recovery vessels and ships) and get rid of the oil spill scientists. We don't need them. Dismantle their world of needless and endless high-paying research that has always led to complete failure to protect the aqueous ecosystems and has not significantly evolved in 50 years. Invest the hundreds of \$Millions in savings in *EFFECTIVE* tools (e.g., NST vessels, large and small) and deploy these vessels to Canada-wide Indigenous organizations for them to own and operate. End of story and end of lucrative and wasteful oil spill "science". DFO-CCG is ground zero for this global "science"; Dr Kenneth Lee, DFO Senior Scientist, is the kingpin.

Dr Lee declares he wants to maintain the assistance of oil spill experts from around the world, working together in a seamless manner when there is an oil spill of national significance. The last time they tried that strategy was when BP's Deepwater Horizon oil well blew out in 2010. The world's greatest oil spill experts, with the world's greatest oil spill equipment (almost 4,000 kilometres of floating boom, 6,000 oil skimmer vessels, and 120 aircraft) plus an army of oil spill workers (48,000), cleaned up only 3% (three) of the oil under *ideal* conditions. These world experts also created an environmental and health catastrophe with their Corexit dispersant and in-situ burning of the oil (which together "processed" less than 15% of the oil. **Report to the President.** The good news for the failed professionals is that the owners and managers of the oil spill *mitigation* companies earned themselves *25 BILLION CAD* (in 2023 dollars) for three months work. The 48,000 workers were low-wage disposable "cannon fodder" thrown into the battle against the spilled oil.

The DWH oil slick eventually reached 70,000 sq miles in area (175,000 sq kilometres). The oil spill experts lost the battle against the oil, as always, but they won the war, as usual. This scenario has been the norm for the past 50 years. It works very well for the highly-paid oil spill experts. For the sickened beach workers and wrecked communities? Not so much.

Minute 18:35 **Alternative Response Measures (ARMs)\_Part Two:**

Dr Lee begins by telling us that some of the ARMs are used in other parts of the world. What he does not mention is that the ARMs, which he has supported for decades, have also been banned for decades in the more scientifically advanced countries in Europe (for being too toxic). Dr Lee tells us that "...now, in Canada, because of legislation, we can't apply them legally...". Dr Lee makes an untrue statement; in 2016, Ottawa legalized them for use on Canada [Canada Gazette – Regulations Establishing a List of Spill-treating Agents \(Canada Oil and Gas Operations Act\)](#) . As Canada's senior oil spill scientist, Dr Lee would have been deeply involved in the successful effort to legalize Corexit for use on Canada.

Dr Lee tells us that chemical dispersants are applied by spraying them from ships. He avoids mentioning that 99.99% of the chemical dispersants are sprayed from airplanes, probably by airstrikes coming from the UK. The local residents will never know. [https://www.youtube.com/watch?v=0RYTNJsD\\_YI&feature=youtu.be](https://www.youtube.com/watch?v=0RYTNJsD_YI&feature=youtu.be) minute 05:20. Why does Dr Lee not describe chemical dispersant *air strikes*? Perhaps these are his reasons: <https://www.youtube.com/watch?v=uzvTB0mOS0w> <http://spilltechnology.com/tdaccess/506179351.mp4>

Dr Lee speaks about chemical dispersants as if they were the same as harmless dishwashing detergent, but household detergent has never been spoken of in discussions about health (e.g., childhood leukemia): [spilltechnology.com/videos/60 MINUTES interview w Toxicologist Wilma Subra.mp4](http://spilltechnology.com/videos/60MINUTES%20interview%20w%20Toxicologist%20Wilma%20Subra.mp4) . Unless, of course, the speaker works for the oil industry:

[Toxic Oil Dispersant is 'Safer Than Baby Shampoo', Canada-Nova Scotia Regulator Claims \(theenergymix.com\)](#) . While it's true that soap and dispersants both allow oils to dissolve into the water, dispersants go much further. They allow the oil to dissolve into human and animal skin, passing through the skin's lipid (fat) cells and entering the bloodstream. The chemical toxins and the oil toxins accumulate in bodily organs. The good news, apparently, is that some seabirds will not contact oil on the surface and that tourists will not contact oil on the beaches. However, these same seabirds and tourists *will* contact the oil, *plus* dispersant, below the surface. The seabirds and other sea creatures must now swim down into toxified water in order to eat the newly-toxified fish. Of course, nobody sees the animals die, which is the main benefit of dispersants. It can also be a grim story for the tourists and local residents that go swimming, or breathe the air laden with toxic aerosols created by dispersant-contaminated waves breaking and splashing onto the beach:

- [VICE on HBO Season 2: Crude Awakening and The Enemy of My Enemy \(Episode 9\) - YouTube](#)  
minutes 5:03 to 6:04 **Dr Ricki Ott**
- <https://www.youtube.com/watch?v=GStug0I210g>

Dr Lee goes on to explain that dispersants allow the extremely toxic oil to be so *diluted* into the water column that there are no toxic effects. Legitimate scientists have known for decades that his statement is false. [The Toxicity to Fish Embryos of PAH in Crude and Refined Oils - PubMed \(nih.gov\)](#) *Because mixture interactions are not well understood, total PAH concentrations >0.1 µg/L (1 part per Billion) following oil spills should be considered hazardous.*

- <https://pubmed.ncbi.nlm.nih.gov/27563691/>
- [A Decade After Deepwater | Changing Seas - YouTube](#)

The most respected scientists have always laughed at this notion that bacteria quickly eat the oil:

<http://www.spilltechnology.com/videos/Doc%20Zone%20-%20Blowout%20-%20Is%20Canada%20Next%202010-12-09.flv>  
minutes 22:38 to 27:23

Minute 21:00 In-Situ Burning (ISB):

Dr Lee begins by pointing out that ISB produces a lot of black smoke. He fails to mention that we are actually looking at black soot escaping into the atmosphere and spreading out over the ice and snow. It eventually settles on the ice and snow, reducing their albedo effect that mitigates global warming. Black soot is responsible for 30% of Arctic warming:

- <https://arctic-council.org/about/task-expert/egbcm/>
- [Black carbon playing major role in Arctic climate change - SciencePoles: polar science magazine](#)

Dr Lee also discusses chemical herders. These are actually valuable tools; they keep the oil *on the water's surface*.

Minute 22:18 Oil Translocation:

"Oil translocation" has been done simply and effectively for decades simply by using pressure hoses and seawater to wash the oil off the rocks and back into the water where it could, in theory, be skimmed. Adding "soap" to assist the process is deadly to the workers on the beach, as can be seen in the Dr Ricki Ott segment, above. In 2016, the Trudeau government legalized the Corexit 9580A that the Exxon Valdez workers were using, and dying from, in 1989. Thirty-five years have gone by and nothing has been allowed to change: [Terms of Reference \(dfo-mpo.gc.ca\)](#) (outsiders not allowed).

Oil spill beach cleanup workers in a significant oil spill are always local residents. They are the expendable "cannon

fodder” that the oil spill experts throw into the battle to clean up the oil. In Canada’s North, the “cannon fodder” will come from the Indigenous communities. Nobody else is close enough, certainly not the oil spill scientists in the south.

Dr Lee discusses the use of fine mineral particles to clean up oil spills. Decades ago, Dr Lee began his career with the notion that throwing fine “sand” onto floating oil can clean it up. This 2001 paper describes the process ([PDF Characterization of oil-mineral aggregates \(researchgate.net\)](#)). Eventually Dr Lee gave that up and switched to chemical dispersants. Now the particles are back, gathering more research funding: [Exploring the effects of substrate mineral fines on oil translocation in the shoreline environment: Experimental analysis, numerical simulation, and implications for spill response - ScienceDirect](#). The science of deploying fine mineral particles, aka *mineral fines* and *oil-mineral aggregates*, can be seen here: [COOGER Arctic - YouTube](#) minute 4:18. It’s worth noting that Dr Lee declares that the only true way to protect the ocean and Arctic from oil spills is to remove the oil from the water and ice minute 4:33 to 4:55. Dr Lee means not burning it, not dispersing it, not sprinkling mineral fines on it, but physically **removing it** from the water and ice. But the latter is the one thing that Dr Lee has studiously *avoided* advancing throughout his long career. Dr Lee is not alone; 99.99% of oil spill scientists and experts utilize the same playbook. The oil industry approves replacing oil spill cleanup with Corexit. It wrote the book on it when Standard Oil, now ExxonMobil, invented Corexit many decades ago.

#### Minute 23:40 Separating Oil from Water at Sea

Dr Lee discusses this important challenge, wondering how to solve it. Northern Spill Technology Inc solved it 20 years ago: [http://spilltechnology.com/ltaccess/GRI\\_OilSkimmerFinal.mp4](http://spilltechnology.com/ltaccess/GRI_OilSkimmerFinal.mp4). Dr Lee and his colleagues in government have never assisted in developing and deploying it [DataWindow \(buyandsell.gc.ca\)](#). A problem solved is no longer available for research funding. Canadian oil spill researchers have received hundreds of \$Millions from the Canadian taxpayers to fund their projects (which have led to zero progress in 50 years). No other industry on earth can match their record.

#### Minute 24:48 Natural Attenuation

Dr Lee asks what happens to the oil that we don’t clean up, that is left in the natural environment. We learned the correct answer to that question on page one of this document; the answer is “Who cares”. Nature will deal with it and, in due course, when nature has completed the job, we’ll have the answer and it will not have cost the taxpayers a dime. The Canadian taxpayers will not have contributed, again, to the revenues of the immensely profitable and immensely failed oil spill industry <https://www.globenewswire.com/news-release/2020/11/06/2122006/0/en/Global-Oil-Spill-Management-Industry.html>. Dr Lee talks about microbes degrading oil in very cold conditions. He doesn’t tell us how long it will take (how many centuries) [SS Arrow leaks oil in Chedabucto Bay 45 years after sinking off Nova Scotia | CBC News](#). Oil spill tools that rely on microbes (e.g., Corexit) are unacceptable for significant ocean and Arctic spills. The oil must be removed.

#### Minute 26:00 Cross-cutting Research

With the exception of developing autonomous vehicles, all other research mentioned here falls into the category of “How many angels can dance on the head of a pin?” It’s irrelevant to successfully cleaning up oil spills (which means removing the oil from the water and ice) so who cares about it beyond the scientists being well paid to work on it? It has proven extremely valuable for accessing vast amounts of government research funding over the last 50 years. That’s an incentive to keep trying to see what happens to the oil even though the knowledge does not offer useful benefits.

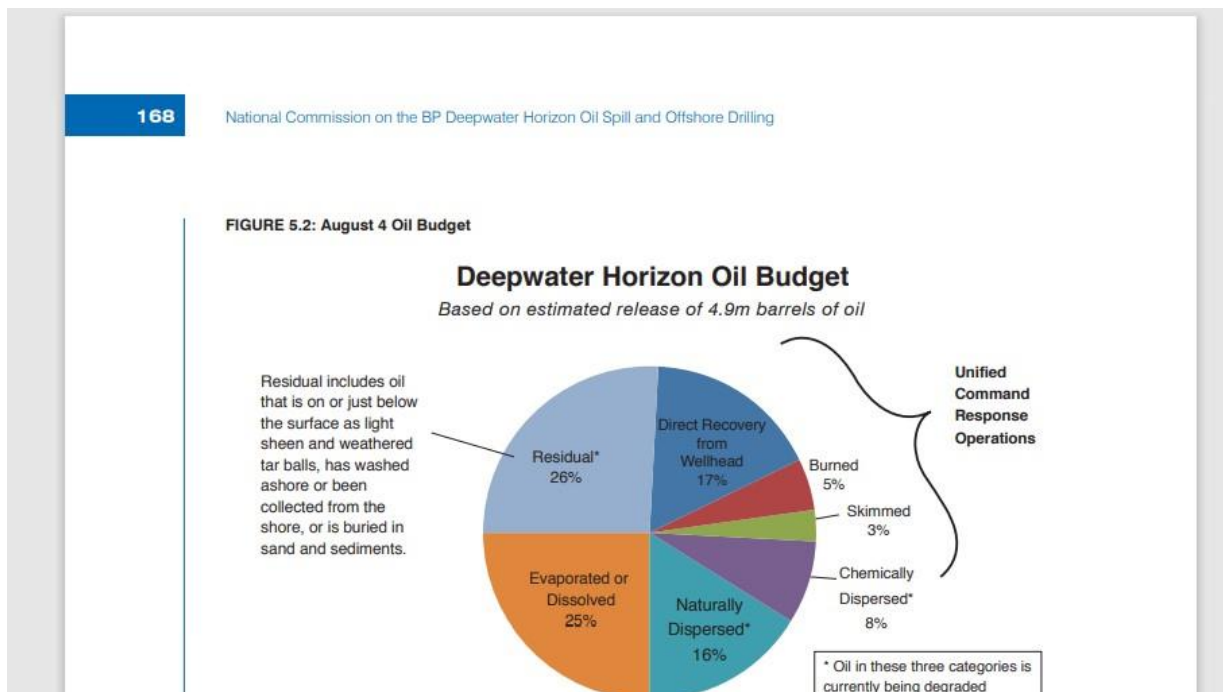
Minute 27:47 Net Environmental Benefit Analysis

Net Environmental Benefit Analysis (NEBA) was invented to justify the poisoning caused by dispersants and the climate damage caused by in-situ burning.

Minute 29:00 I Have Learned...

Dr Lee says he has learned a lot in over 35 years of oil spill research. He has learned that all oil spills are different in some ways and that the environment is constantly changing. There can even be different types of oil. The only thing that Dr Lee and his colleagues have never learned is how to clean up oil spills on oceans, seas, gulfs, large lakes and the Arctic. Dr Lee concludes the video by saying “*We have to make decisions*”. Dr Lee has spent 35 years creating alternative response methods and spill-treating agents, almost none of which work to protect the environment. None of them can get the oil out of the water, which is the only thing that matters. His “science” complicates the decision-making, to no useful end. There is only one ethical decision required: *Quickly get the spilled oil out of and off of the water and ice, or give up and let nature deal with it*. Removing the oil from the water and ice is the preferred option, but not always possible, in which case let nature deal with it at nature’s pace. Nature can eventually deal with oil; nature can’t deal with oil *plus* dispersant [Synergistic toxicity of Macondo crude oil and dispersant Corexit 9500A® to the Brachionus plicatilis species complex \(Rotifera\) - ScienceDirect](#) .

The oil industry uses the following mantra when dispersants and in-situ burning are deployed, “**We make a bad thing (the oil spill) less bad**”. It is clearly a ludicrous mantra because the current mainstream oil spill tools preferred by the oil industry make a bad thing catastrophic. **Mantra courtesy of the Woods Hole Oceanographic Institution**





## How to Successfully Clean Up Oil Spills on Oceans, Seas, Gulfs, Large Lakes and the Arctic

- 1) Do not throw untrained and unprotected local labour at the problem.



Dying oil spill worker

- 2) Rely instead on modern, non-toxic oil spill technology installed inside modern vessels.

