

### Oil Spills

*When I was thinking of what to do for my service project, I thought, “What would people not think of doing? Is there an existing solution to that problem?” I wanted to do something original. Then I remembered that in 2017, a teenager found a sorbent which will collect oil in minor oil spills, and I focused on that. Then I came to the problems, “What about big oil spills? How should we get rid of the sorbent without causing more pollution?” and focused on that. And finally, came time for my action. I’m talking about liquefied petroleum gas or, in short, LPG.*

**Risks.** *According to specialized scientists, the physical risks of coming into close contact with LPG, which will significantly rise in frequency with oil spills, are skin and eye irritation, neurological complications, breathing problems, elevated stress. Little is known about the long-term effects, increased hemoglobin, hematocrit, Alanine transaminase, alkaline phosphatase and aspartate transaminase. Lowered immunity, abnormalities in pulmonary and cardiac functions. As well as an extremely high chance of developing RADS (Reactive Airway Dysfunction Syndrome) and Chronic Rhino sinusitis. According to National Academics, people exposed to oil spills are more likely to be involved in drug use (alcohol, drug, addiction) and higher aggressive and violent tendencies and thoughts. Meaning that people exposed to oil spills are more vulnerable psychologically and more prone to addiction and trouble with the law and other people. When an oil spill occurs in an ocean or an area of freshwater, the oil does not blend in with the body of water. Therefore, oil floats on the surface of the salt and fresh water. Over a very short period, the oil forms into a thin layer, less than 0.01mm thick. This will block any sunlight from reaching underwater environments, which can severely impact producers, therefore, the entire food chain of an ecosystem collapses.*

**Anika Bhagavatula.** *Oil spills are a huge problem in our developing society and the problem is not in the attention of the public when it should be because of the possible outcomes: in the dangers of both our, mental and physical health, and marine life of where the oil spills happen. In 2017, Anika Bhagavatula created a sorbent to clean up small oil spills. The sorbent’s contents were orange peels and pomegranate husks with a biodegradable material which is permeable. The sorbent can withstand up to two to three times the amount of oil to its weight. She was inspired to find a way to clean up oil spills because of the ongoing fears of the Dakota Pipeline and that it would pollute the Missouri river. With her research, she was given the opportunity to possibly win 25,000 US dollars and the title of America's Top Young Scientist, as well as becoming one of the national finalists in the Discovery Education 3M Young Scientist Challenge in 2017.*

**How do we get rid of the used sorbents?** *As I went on with my research, I started to wonder, how are we supposed to get rid of the sorbents after use? I started thinking of different ways and about the one that was the best, as in most accessible and used. On the other hand, landfills create a lot of pollution, I either needed to find another way to get rid of them or adjust to a new system to fit my needs. I decided to remodel it and use existing research to create a ‘revamped landfill model’. For this new landfill, it will be like a huge*

metal box with a metal door and a tube coming out of it, going into the ground. How the landfill is going to work is as follows, there must be no glass, plastic or any material which may break, crack or melt. The metal used must be either asbestos, titanium, steel alloys or vermiculite, because of their strength and resistance to fire. Make sure the ground below is mostly hollow and it is spread out well and the door is closed very well. Now it is time to tell you what it is. This landfill will have its contents, which are put inside it through the door, burnt and the smoke will pass through a filter which then leads the smoke into the ground where it undergoes a certain process and transforms it into a crystal-rock mix of some sort, with precautions for it not to leak. People may not want to build several of these landfills per area because of the cost (can cost from \$250,000 up to \$2,000,000 depending on their size and material) but it might work and if it is successful, the smoke crystals may become an extremely good wave of trade which can help struggling economies.

**What about larger oil spills?** We can use the same sorbents, just gather the oil by pushing the oil's boundaries closer together as the oil creates a thin layer above the water. Create boundaries to surround the oil to stop it from spreading, shrink the contaminated area to a reasonable size to use the sorbent and add the sorbent. If the oil in general turns to grains and starts to sink, use existing filtration of water methods.

**My action (reusing oil in construction).** For my action, I attended a conference on eco-construction and how we can reduce our carbon dioxide emissions to close to zero through construction, on the 7<sup>th</sup> of February in SGGOŠ. I tried to focus on reusing LPG in construction. We can reuse oil as follows:

<b>What?</b>	<b>How? /Examples</b>
Oiling Machinery	To make sure all machinery runs smoothly to prevent squeaking and possible mishaps
Heating	Oven, washing/drying machine, overall heating
Bitumen Boilers	To heat bitumen to its melting point before it is applied to a flat roof. Bitumen is used for its adhesive and waterproofing qualities
Geoengineering	Geoengineering (CO2 catching). Use the LPG to run these turbines, making a cycle.
Modern Windmills	Use them for processes such as transferring energy so that the wind energy isn't wasted.

Why reuse oil? If we only clean up oil spills, it will still cause harm to marine life, humans and other animals. The next step of cleaning oil spills is taking a step back. We need to prevent oil spills and be ready to clean them up if they happen. I thought, since we use liquid petroleum gas so much as a society, cutting it out wouldn't work, but if we reuse oil, that might just work. We can reuse purified oil from oil spills and wasted oil. Construction is a good place to start since construction builds up our everyday lives and if we can reuse oil in a very familiar way, we can evolve it into different things, and possibly develop technology with the same theory.



**Conclusion.** To conclude, oil spills can ruin several ecosystems on this planet, us included, and if we delve deeper into the problem, we can find a solution that is not only perfect for us, but other species and the planet as well. The least we can do is begin to reuse oil in everyday things such as construction and clean up oil spills with sorbents. We, humans, are just, overall, lazy creatures and this can be a turning point. We need to at least **try** to fix what we have done to our home because we are going to ruin everything for current species, future species and we already have ruined it for past species (Dodo, Stellar Sea Cow, Baiji White Dolphins, etc.)

The big picture which I created with this project has many perspectives and can be solved easily step by step. First, be aware and pinpoint where you use LPG mostly in your everyday life. Then, bring up the topic in related conversations; it will spread the message and trigger people to think more and more about the topic. Next, replace LPG products which you own to reduce the consumption of oil. Afterwards, begin speaking up about it, inform the public. And finally, more and more people will be aware. I suggest we reuse as much oil as we can and be ready to clean up oil spills.

### Sources

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3. Marinho, Fernando. "This 14-Year-Old Discovered a New Approach to Cleaning up Oil Spills." Business Insider, Business Insider, 11 July 2017, [www.businessinsider.com/14-year-old-new-approach-cleaning-up-oil-spills-2017-7](http://www.businessinsider.com/14-year-old-new-approach-cleaning-up-oil-spills-2017-7).