

Petroleum transport

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Petroleum transport is the transportation of petroleum and derivatives such as petrol (gasoline).^[1] Petroleum is transported rail cars, trucks, tanker vessels, and through pipelines. What method is used to move this oil really depends on the amount they are moving and where they are moving it to. The biggest problem with moving this oil is pollution, and the chance that the oil can spill. Petroleum oil is very hard to clean up and is very toxic to living animals.

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Methods

Marine vessels

Marine oil tanker and barges can transport this petroleum all around the world. These vessels are used because they can carry a lot of fuel, so the amount it costs per barrel to move this oil is very cheap. These tankers are also really the only way to move crude oil across the oceans. Usually the larger tankers are used to transport this fuel on a global scale, taking fuel from one continent to the other. Barges are a lot like tankers, however barges are a lot smaller and do not have any method of propulsion to move them. Barges are often pushed or towed by tugs. This makes barges very poor for transporting this oil for long distances. Barges are very poor for traveling across rough seas, so they are used in calmer waters. However, these barges are usually used for transporting the fuel shorter distances.^[2]

Pipelines

Pipelines are used to transport oil from the wells to refineries and storage facilities. Pipelines are viewed as the most cost efficient way to move oil on land. First the oil is collected at the wellhead, or some area where they oil is stored. From the wellhead it is pumped across the land through a pipe, and is discharged at its destination which typically is a refinery. However, pipelines can be used the same way to deliver already refined fuels such as gasoline, diesel and even jet fuel from the refinery to distribution facilities or a consumer. These pipelines are not just a solid line of straight pipe, but have various components on the pipeline. These pipelines will have booster pumps to keep the fuel moving along a long distance, inspection areas to make sure that the fuel is not getting any contaminants, and even other collection and delivery points along the way. Though it costs a lot of money and time to set up these pipelines, the operation cost is significantly less than using any other type of transportation. Also the amount of man power needed to move this oil is not that much. Pipelines offer the most efficient mode of transporting this oil across a land mass.^[3] Even though these pipes are extremely cost effective there are some circumstances where this is not true and it is more logical to use another method. An example of this is how it is cheaper and more logical to use a ship to move the oil across the Atlantic Ocean than a pipeline.

Rail cars

Railcars are another way to move crude oil across a landmass. The oil is loaded into the railcars, and are moved by a diesel train across the rails to the refinery or the trains planned destination. Trains can carry a mass amount of this oil by using of multiple tank cars. Though each rail car holds a lot less oil than a large marine tanker vessel, when multiple are used a lot of oil can be transported. For example, the DOT-111 tank car is a very common tank car and can hold 34,500 US gallons (820 bbl; 131 m³). If ten tank cars were pulled the train would be carrying 345,000 US gallons (8,200 bbl; 1,310 m³) of oil, so the amount of volume adds up fast. The locomotive used to pull these rail cars have a mass amount of horsepower and can be hooked up with other

locomotives to increase the horsepower, making the rail car a fairly cost effective way to move this oil. These railcars just like the pipelines can be used to carry a refined fuel instead of crude oil from a refinery to a distributing plant.^[4] Railcars are a common way to move this fuel a long distance to areas where they do not have pipelines set up.

Trucks

Tank trucks are used a lot like rail cars are, but they will usually transport refined fuel to a fuel station, like a gas station. Trucks are usually used to carry smaller capacities of oil short distances. Like railcars these trucks can carry a whole bunch of different forms of this petroleum, but they do not really carry the petroleum in its crude oil form because it would take a lot of trucks to deliver the volume of crude that the refineries demand. These trucks can deliver this fuel to gas stations, or deliver the fuel straight to the consumer.^[4] These trucks are used in situations where it would be illogical to use railcars, pipelines and tanker ships. Places like gas stations; that are not able to be accessed by marine vessels, and do not demand the volume that is delivered by pipelines or trains, would get their fuel from tanker trucks. This allows a rational and cost effective way to deliver the fuel to the consumers.

Pollution concerns

Every method of transporting this petroleum have the potential for a major oil spill. However, the amount of oil spilt while it is in transport is a surprisingly small percentage of the total oil spilled. Most oil is spilt during loading and unloading and industrial plants accidentally spilling the oil into the ground. Regulations are created to help prevent oil from spilling everywhere. Some of these regulations include forcing marine tankers to have double hulls, and making a minimum of two man crew on trains that are carrying crude oil. Even though the least amount of oil spills happens when the oil is in transit, regulations are still put in. if the oil was spilt while it is in a ship, tank truck, pipeline or rail car, it can result in fire, poisoning of plants, injuries and fatalities of the crew and citizens. There are also regulations put in place to prevent the spilling of oil and petroleum vapors while loading and unloading these fuels as well as processing the oil.^[4] The goal of these regulations is to make sure that all the oil is delivered or processed equals the amount of oil that was received. A simple example of this is the vapor guard on the nozzle of the gas pump at the gas stations.^[3] These regulations make sure that the companies watch to see that they do not have leaks in any pipes or equipment. When the oil is being processed is when it has a great potential of being leaked, so constant watch is required. These regulations are constantly changing as more discoveries on how to better control oil spills are being found.^[4]

References

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- Trench, Cheryl J. (December 2001). How Pipelines Make the Oil Market Work – Their Networks, Operation and Regulation (PDF) (Report). New York: Allegro Energy Group.
- 5.2 Transportation And Marketing Of Petroleum Liquids (PDF). *AP-42, Compilation of Air Pollutant Emission Factors* (Report) (fifth ed.) (EPA). 2008. Retrieved 21 April 2015.

External links

- Oil Transportation (http://www.petrostrategies.org/Learning_Center/oil_transportation.htm)
- United States Department of Transportation. (n.d.). Bureau of Transportation Statistics. *Table 1-61: Crude Oil and Petroleum Products Transported in the United States by Mode* (http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_statistics/html/table_01_61.html)

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