

CHEMICAL POLLUTION AND MITIGATION STRATEGIES



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Air Pollutant

Air pollutant are chemicals that are released to the atmosphere by chemical reactions based on human activities such as combustion, open burning and, the release of gaseous substances from factories. The toxic chemicals released to atmosphere causes harm not only to humans but also the environment which will cause such as major disruption to the food chain since air pollution will most likely to cause some species to die.



(Alfred T. Palmer, Smokestacks from a wartime production plant, 1941 - Google Search, 2013)

There are 6 major types of pollutants which is nitrogen oxide, ozone, lead, particulate matter, carbon dioxide, and sulphur dioxides. These major pollutants are found the most within the atmosphere. These chemicals are release from its sources.

Sources of Air Pollutant

Power plant, oil refineries and factories. A lot of chemicals are released the most as these establishment produce powers and sources continuously for the use of mankind's development.



(Power Plant from Power Engineering International Malaysia - Google Search, 2016)

Cities are packed with humans that lives and work there. A busy road will create dense concentration of smog that are filled with toxic chemicals such as NO₂ and



National Geographic Society. (2011, January 21). smog. National Geographic Society. <https://www.nationalgeographic.org/encyclopedia/smog/>

Water Pollutant

Contaminated water is water with new composition that has been changed to the extent that it is cannot be use. It is occur when harmful chemical and toxic substances contaminate and readily dissolve into and mix with water as a result of human activities which will degrading the



Sources of Water Pollutant

Agriculture is leading cause of water degradation. It is known as the biggest consumer of global freshwater resources but this sector also a serious water polluter too.



Hancock, N. (2016, November 28). Safe Drinking Water Foundation. Safe Drinking Water Foundation. <https://www.safewater.org/fact-sheets-1/2017/1/23/water-pollution>

Oil pollution. Almost half of the estimated 1million tons of oil that pollute marine environments every year comes from land-based sources like factories, cities and farm and not from tanker spills. Under the ocean floor will also naturally release oil through seeps.



Aswad.M.N (2019, April 20). Throw the book at oil spill culprits, say environmentalists. NST Online; New Straits Times. <https://www.nst.com.my/news/nation/2019/04/481307/throw-book-oil-spill-culprits-say-environmentalists>

Radioactive substances. This pollution emits big amount of radiation and it's generated by uranium mining, nuclear power plants, production and testing of military weapons, radioactive materials that use for medicine and



Water Pollution Radioactive Garbage Toxic Substance Stock Photos, Pictures & Royalty-Free Images.(2021) - iStock. Istockphoto.com. <https://www.istockphoto.com/photos/water-pollution-radioactive-garbage-toxic-substance>

How Pollutant Enter Ocean

Sewage or pollutant contaminants run directly into the ocean by sewage, ponds or drains. This is also how minerals and substances make their way into the ocean from mining camps. The release into the ocean environment of other chemical nutrients contributes to a decrease in the levels of oxygen, the degradation of plant life and a significant decrease in the



Greentumble Editorial Team. (2018, September 7). Veterans Off-Grid. Veterans Off-Grid. <https://www.veteransoffgrid.org/blog/water-pollution-facts-causes-effects-solutions>

Land Runoff

This is as the water infiltrates the surface as much as possible and the surplus water flows into the ground and the ocean from the rain, floods. This water absorbs toxic chemicals from the ocean that are produced by humans such as fertilizers, petroleum, pesticides

and other forms of oil contaminants. The development of dead fields can be very harmful for the ocean by fertilizers and pollution from land animals and human being.



Runoff: Surface and Overland Water Runoff. (2017). Usgs.Gov. https://www.usgs.gov/special-topic/water-science-school/science/runoff-surface-and-overland-water-runoff?qt-science_center_objects=0#qt-science_center_objects

Airborne

The pollutant from atmosphere drawn to ocean in the form of rain. The end result of fossil gasoline and industrial combustion that mainly produces nitrogen oxides and sulphur dioxides has been acidic by way of pollutants in the air without difficulty defined as acid rain, or fo



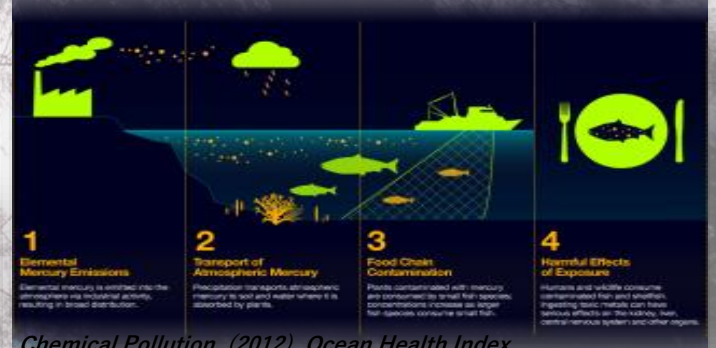
How Pollutant Transfer to Organism

Through ingestion, dermal absorption, and skin, these chemicals can transfer to humans and other organisms. It also can be entered through inhalation. If chemicals from the air such as CO_2 , SO_2 , and NO enter the freshwater supply as acid rain which humans and animals rely on for drinking, it may no longer be safe for consumption or sanitation



Water pollution from agriculture: a global review Executive summary. (n.d.). <http://www.fao.org/3/a-i7754e.pdf>

Mercury Pollution Cycle



Chemical Pollution. (2012). Ocean Health Index. <http://www.oceanhealthindex.org/methodology/components/ch-chemical-pollution>

Same goes to farmer that uses pesticides. These chemicals usually bring out of fertilizer by rain and enter the soil into the sea. If we refer to the food chain, small fish eat the algae and eaten by other bigger fish. These fishes will be eaten by human or other carnivores and at the same time these harmful chemicals contain in the fishes will be entered in consumers' body.



Impact of Chemical Pollution on Organism

Chemical pollution has a serious impact on marine organisms and human being. Too much exposure of this pollutant can lead to accumulation in animal tissues process that affect growth, and reproduction of marine organisms.



(2018). Amazonfrontlines.org.

<https://www.amazonfrontlines.org/m3di4/HealthOil4.jpg>

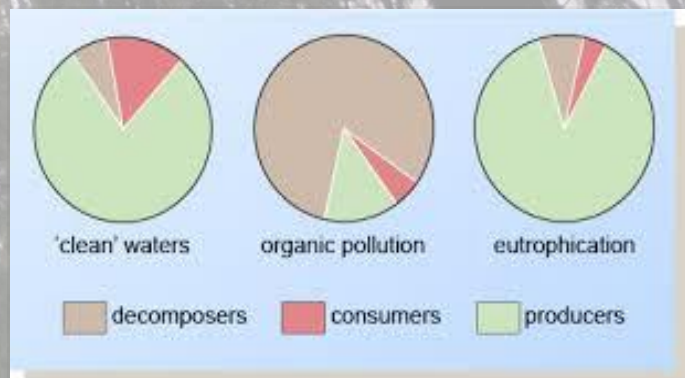
When it comes to water, too much of these nutrients induces eutrophication, which causes the excessive growth of algae.

Thus, produces algal blooms which spreads toxins known as brown tides or red tides. Both tides are responsible for killing marine mammals, and harm humans. When these harmful blooms die, the bacteria consumes all of the oxygen and creates a dead zone and fish cannot live in this area.



Water Pollution - Chemistry Encyclopedia - gas. (2017).
Chemistryexplained.com.
<http://www.chemistryexplained.com/Va-Z/Water-Pollution.html>

Acid rain is one of the impact. It is the result of nitrogen oxides and sulphur dioxide forming to make mild acidic compounds. At really low levels, acid rain can simply stress the fish in streams and lakes. However, at higher levels, acid rain can kill them. In addition, acid rain causes trees to become weaker and creates harmful air pollution to humans.



How You Can Prevent Pollution | A Consumer's Guide. (2019).
ConsumerNotice.org.
<https://www.consumernotice.org/environmental/pollution-reduction/>

Mitigation Strategies

Mitigation strategies likely known as taking steps to reduce the severity of impact or probability of occurrence. We already know the factor and affect of pollution. So how to control or reduce it? Here comes the solution.

1. Air Pollution Prevention

You can reduce the amount of air pollution that you put in the air by driving more efficiently or driving less. You can also schedule your multiple home deliveries so they arrive on the same day. In fact, it can reduce pollution from delivery trucks. To improve your gas mileage and at the same time reducing pollution, keeping your car in tune and its tires properly inflated.



Romain Loury. (2019, July 17). <https://www.euractiv.com/section/air-pollution/news/reducing-car-traffic-could-be-the-only-solution-to-reduce-air-pollution/>

2. Air Pollution Prevention

To buy a product, make sure to look for “Low VOC” in products’ labels, and to reduce evaporation, make sure containers are tightly sealed. You should buy products with the EPA’s “Safer Choice” label. According to those agencies, these are products that work as well as conventional products but are safer for human health and the environment.

Look for the
EPA’s Safer Choice label.



US EPA, OCSPP. (2013, August 9). Safer Choice | US EPA. US EPA. <https://www.epa.gov/saferchoice>

3. Air Pollution Prevention

By using Energy Star certified products can reduce greenhouse emissions through energy efficiency. Turning off the light when not in use can make a huge

Look for the government-backed
symbol for energy efficiency.



ENERGY STAR. (2021). Energystar.Gov. <https://www.energystar.gov/>

1. Water Pollution Prevention

To reduce water pollution, using alternatives to toxic pesticides is one of the ways. By planting native flowers, shrubs, and trees that are resistant to pests can attract pollinators and other beneficial insects. You can also install bird and bat houses in your yard to combat pesky bugs. A similar approach to fertilizer can be used. Nutrients that contain in fertilizer can overstimulate water plants and algae.



Kellogg, K. (2007, July 26). *How to Reduce Water Pollution*. WikiHow; wikiHow. <https://www.wikihow.com/Reduce-Water-Pollution>

2. Water Pollution Prevention

If it consists of a lot of fertilizer can damage plants and pollute groundwater. By leave grass clippings on the ground after you mow can create a free, slow-release fertilizer.



3. Water Pollution Prevention

Organic material buried in landfills creates landfill as it decomposes and flows into the ocean. To help your garden or lawn grow, you can compost organic waste such as food scraps and grass clippings. Besides compost, buy products made with recycled materials. And change from cloth mops to rechargeable batteries instead of



5 Ways to Use Finished Compost at Home - Gardening Channel. (2010, April 22). Gardening Channel. <https://www.gardeningchannel.com/use-your-compost-now/>

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<https://www.theworldcounts.com/challenges/toxic-exposures/polluted-bodies/effects-of-chemical-pollution-on-human-health/story>

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Nur Aqilah binti Ismail
'we are the voice to those voiceless animals'



Ahmad Amirul Haiqal bin Ahmad
'ocean is one of the pinnacle of life'



Nur Aimaz Fatimah binti Yunardi
'when it comes to marine life, our existence depends upon their existence'



Nur Ain Shazlin binti Shaari
'if not us, then who ? They need us'



Amirul Syahiir bin Abd Manaf
'life is like the ocean, it goes up and down'



Zakirah binti Osman
'I hope you will heal so that you can continue to bless us with more of your treasure'

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