River Pollution In Malaysia

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What is River Pollution

River pollution is the contamination of water bodies of rivers, usually as a result of human activities. River pollution results when contaminants are introduced into the natural environment. The causes of water pollution include a wide range of chemicals and pathogens as well as physical parameters. Contaminants may include organic and inorganic substances. Elevated temperatures can also lead to polluted water. A common cause of thermal pollution is the use of water as a coolant by power plants and industrial manufacturers. Elevated water temperatures decrease oxygen levels, which can kill fish and alter food chain composition, reduce species biodiversity, and foster invasion by new thermophilic species. River pollution is a major global problem. It requires ongoing evaluation and revision of water resource policy at all levels (international down to individual aquifers and wells). It has been suggested that water pollution is the leading worldwide cause of death and diseases.

River pollution is measured by analysing water samples. Physical, chemical and biological tests can be conducted. Control of water pollution requires appropriate infrastructure and management plans.

Figure 1: A Heavily Polluted River

Environmental Quality Act 1974

Section 25: Restrictions On pollution of inland waters.

(1) No person shall, unless licensed, emit, discharge or deposit any environmentally hazardous substances, pollutants or wastes into any inland waters in contravention of the acceptable conditions specified under section 21.

(2) Without limiting the generality of subsection (1),a person shall be deemed to emit,discharge or deposit wastes into inland waters if-

(a) he places any wastes in or on any waters or in a place where it may gain access to any waters;

(b) he places any waste in a position where it falls, descends, drains, evaporates, is washed, is blown or percolates or is likely to fall, descend, drain, evaporate or be washed, be blown or percolated into any waters, or knowingly or through his negligence,whether directly or indirectly,causes or permits any wastes to be placed in such a position; or

(c) he causes the temperature of the receiving waters to be raised or lowered by more than prescribed limits.

(3) Any person who contravenes subsection (1) shall be guilty of an offence and shall be liable to a fine not exceeding one hundred thousand ringgit or to imprisonment for a period not exceeding five years or to both and to a further fine not exceeding one thousand ringgit a day for every day that the offence is continued after a notice by the Director General requiring him to cease the act specified therein has been served upon him.

Causes of River Pollution

Sewage

With billions of people on the planet, disposing of sewage waste is a major problem. . Sewage disposal affects people's immediate environments and leads to water-related illnesses such as diarrhea that kills 525,000 children under five each year. Yet the problem of sewage disposal does not end there. When you flush the toilet, the waste has to go somewhere and, even after it leaves the sewage treatment works, there is still waste to dispose of. In practice, sewage contains all kinds of other chemicals, from the pharmaceutical drugs people take to the paper, plastic, and other wastes they flush down their toilets. When people are sick with viruses, the sewage they produce carries those viruses into the environment. It is possible to catch illnesses such as hepatitis, typhoid, and cholera from rivers.

Nutrients

Chemical fertilizers used by farmers also add nutrients to the soil, which drain into rivers and seas and add to the fertilizing effect of the sewage. Together, sewage and fertilizers can cause a massive increase in the growth of algae or plankton that overwhelms huge areas of oceans, lakes, or rivers. This is known as a harmful algal bloom. It is harmful because it removes oxygen from the water that kills other forms of life, leading to what is known as a dead zone.

Waste Water

Factories are point sources of water pollution, but quite a lot of water is polluted by ordinary people from nonpoint sources; this is how ordinary water becomes waste water in the first place. Virtually everyone pours chemicals of one sort or another down their drains or toilets. Even detergents used in washing machines and dishwashers eventually end up in our rivers and oceans. So do the pesticides we use on our gardens. A lot of toxic pollution also enters waste water from highway runoff.

Chemical Waste

Another kind of toxic pollution comes from heavy metals, such as lead, cadmium, and mercury. Lead was once commonly used in gasoline (petrol), though its use is now restricted in some countries. Mercury and cadmium are still used in batteries (though some brands now use other metals instead).

Radioactive Waste

Radioactive waste is any pollution that emits radiation beyond what is naturally released by the environment. It's generated by uranium mining, nuclear power plants, and the production and testing of military weapons, as well as by universities and hospitals that use radioactive materials for research and medicine. Radioactive waste can persist in the environment for thousands of years, making disposal a major challenge

Plastics

Plastic is one of the most common materials, used for making virtually every kind of manufactured object from clothing to automobile parts; plastic is light and floats easily so it can travel enormous distances. Most plastics are not biodegradable (they do not break down naturally in the environment), which means that things like plastic bottle tops can survive in the marine environment for a long time. While plastics are not toxic in quite the same way as poisonous chemicals, they nevertheless present a major hazard to seabirds, fish, and other marine creatures. For example, plastic fishing lines and other debris can strangle or choke fish.

Alien Species

Alien species (sometimes known as invasive species) are animals or plants from one region that have been introduced into a different ecosystem where they do not belong. Outside their normal environment, they have no natural predators, so they rapidly run wild, crowding out the usual animals or plants that thrive there.

Thermal Pollution

Heat or thermal pollution from factories and power plants also causes problems in rivers. By raising the temperature, it reduces the amount of oxygen dissolved in the water, thus also reducing the level of aquatic life that the river can support.

Effects of River Pollution

1. Diseases: In humans, drinking or consuming polluted water in any way has many disastrous effects on our health. It causes typhoid, cholera, hepatitis and various other diseases.

2. Destruction of Ecosystems: Ecosystems are extremely dynamic and respond to even small changes in the environment. Water pollution can cause an entire ecosystem to collapse if left unchecked.

3. Eutrophication: Chemicals in a water body, encourage the growth of algae. These algae form a layer on top of the pond or lake. Bacteria feed on this algae and this decreases the amount of oxygen in the water body, severely affecting the aquatic life there.

4. Effects the food chain: Disruption in food chains happens when toxins and pollutants in the water are consumed by aquatic animals (fish, shellfish etc) which are then consumed by humans.

Figure 2: Dead Fish in a Polluted River

Solutions to River Pollution

Better treatment of sewage

So treating waste products before disposing of it in a water body helps reduce water pollution on a large scale. Agriculture or other industries can reuse this wastewater by reducing its toxic contents.

Use environmentally friendly products

By using soluble products that do not go on to become pollutants, we can reduce the amount of water pollution caused by a household. Do not throw chemicals, oils, paints and medicines down the sink drain, or the toilet. In many cities, your local environment office can help with the disposal of medicines and chemicals. Check with your local authorities if there is a chemical disposal plan for local residents.

Education

Environmental education programmes that are set up by the government to educate the public about the importance of keeping our rivers clean.

The RIVER Ranger Programme. It is a programme about the environment, water resources and rivers, and emphasizes not only about water pollution but every aspect of freshwater ecosystems including its biodiversity, functions, values, and benefits to mankind.

Objectives

- To increase public awareness and knowledge in managing resources
- To provide living skills to participants for use in local environmental management
- To coach participants on ways to evaluate and audit river basins
- To develop a database on local rivers by the local community
- To motivate participants to initiate water/river conservation projects in their school, community or organisation

Figure 3: The RIVER Ranger Programme

Legislation

More strict laws to control and prevent river pollution. The government introduced new policies and regulations to ban certain pollutants, with pollution permits to be issued as control measures. Example: harsher punishments for waste dumping at rivers will deter people and factories from dumping their waste into rivers. According to The Environmental Quality Act of 1974 prescribes a fine of up to RM100,000 and/or a jail term of up to five years for those found to have been willfully or negligently polluting rivers. Authorities should enforce the law to further prevent river pollution.

Economic

Most environmental experts agree that the best way to tackle pollution is through something called the polluter pays principle. This means that whoever causes pollution should have to pay to clean it up, one way or another. Polluter pays can operate in all kinds of ways. It could mean that tanker owners should have to take out insurance that covers the cost of oil spill cleanups, for example. It could also mean that shoppers should have to pay for their plastic grocery bags, as is now common in Ireland, to encourage recycling and minimize waste. Or it could mean that factories that use rivers must have their water inlet pipes downstream of their effluent outflow pipes, so if they cause pollution they themselves are the first people to suffer. Ultimately, the polluter pays principle is designed to deter people from polluting by making it less expensive for them to behave in an environmentally responsible way.

River Pollution Cases

River Near Ipoh Turns White - 10 April 2020

Videos have emerged of a river reportedly near Ipoh which appears to have turned foamy and white as a result of pollution allegedly caused by waste from a nearby factory. Ipoh resident Asri Janggut, who posted the videos on Facebook, said he had chanced upon the river near the Jelapang industrial area yesterday. He told Perak Environment Department director Rosli Zul about his experience on Facebook, saying pollution at the river was nothing new. Rosli said the factory Asri referred to was last audited on Aug 8, 2019. He said it was found to be compliant with environmental standards.

For now, Rosli said, officers have taken water samples and fish carcasses to be analysed by the fisheries department. “If they are found to have committed an offence under environmental protection laws, we will take serious action,” he was heard saying.

It is learnt that the environment and water ministry will respond to the matter soon.

Source:
https://www.freemalaysiatoday.com/category/nation/2020/04/10/concerns-over-pollution-as-river-near-ipoh-turns-white/

Figure 4: River Turns White Due To Pollution

Sungai Muda Under Threat Of Pollution - 3 February 2020

A former sand mining pool next to a main water source for Kedah and Penang is now filled with e-waste, raising concerns of a looming pollution crisis amid a water shortage caused by the current dry spell in the region. The three-acre mining pool at Kampung Belida near Kuala Ketil, once a popular fishing ground for anglers, is now topped with rubbish. Just metres away is Sungai Muda, which supplies water to over 50,000 padi farmers, as well as the main source of water for Kedah and Penang.

The waste comprised mostly electronic parts such as computer chipboards as well as municipal waste from abroad.

Checks at the Kampung Belida dumping ground showed similarities with other illegal dumps in Sungai Petani. There were plastic pellets and municipal waste from Canada, France and other developed countries. Environmental activist Aziz Mat Nayan said the problem started about four years ago when locals started dumping rubbish there.“The mining pool used to be 20 to 30 feet deep. And had water in it. But now it is filled with plastics to the brim. “We have complained many times but no action has been taken,” Aziz, from Persatuan Tindakan Alam Sekitar Sungai Petani”

Source:
https://www.freemalaysiatoday.com/category/nation/2020/02/03/sungai-muda-kedahs-source-of-water-under-threat-of-pollution-from-e-waste-dump/

Figure 5: Aerial View Of The Former Sand Mining Pool

Pahang rivers most polluted with 449 shutdowns - 22 August 2019

MINING and logging activities in Pahang have resulted in heavy river pollution that robbed the state of 2,816 hours of water supply in 2018 alone. National Water Services Commission (SPAN) commissioner Faizal Parish Abdullah said Pahang's water treatment facilities also recorded the highest number of shutdowns in the country due to a series of pollution cases. He said to date, land development, mining and logging activities have resulted in 449 temporary shutdowns at the treatment plants in the state.

Last year, Pahang's Department of Environment (DoE) confirmed pollution at Sungai Terpai as the stream was stretching along the logging area in Sungai Lembing. The forest around Sungai Lembing had been exploited as the trees were being felled ruthlessly by both legal and illegal logging companies. A newspaper report recently revealed that water at Sungai Terpai had turned murky and yellowish in colour as a result of logging activities around Sungai Lembing which had expanded to 500ha.

In addition to logging activities, Pahang has also been the hub for bauxite mining activities, which has a triple threat to the water, air and soil around the mining area. Due to the rampant environmental pollution, the mining activities in Pahang have been suspended since 2016.

Source:
https://themalaysianreserve.com/2019/08/22/pahang-rivers-most-polluted-with-449-shutdowns/

Figure 6: Researcher Performing A Water Sampling Quality Test

Sungai Kim Kim Polluted By Toxic Waste - 25 March 2019

What started out as an isolated incident of illegally dumping chemicals into a Johor river has escalated into a wave of chemical poisoning cases, with more than 2,700 people taken ill. The Malaysian education ministry has closed all 111 schools in Pasir Gudang, while the federal parliament debated a motion on whether to declare a state of emergency, only to later decide against it.

Figure 7: Authorities Testing The Toxicity Of The River

Timeline

Mar 6: A tanker lorry believed to be from an illegal tyre recycling factory dumps 20 to 40 tonnes of chemical waste into Sungai Kim Kim.

Mar 7: Thirty-five people, mostly students, are hospitalised after breathing in fumes from the toxic chemicals dumped in Sungai Kim Kim.

Mar 8: Initial cleaning works inadvertently worsens the chemical reaction, as the contractor engaged was not experienced in dealing with chemical waste.

Mar 10: Three men are said to have been detained, including two factory owners and a worker who are all in their 50s.

Mar 11: The two affected schools reopen but a second wave of chemical poisoning hits. More than 200 people are affected.

Mar 12: The number of people seeking treatment rises to 260, as 13 schools are ordered shut.

Mar 13: The education ministry orders all 111 schools in Pasir Gudang to close, while the number of people affected crosses the 500 figure.

Mar 14: More than 2,700 people are affected by the incident.

Mar 15: The police say no arrests have been made thus far, despite earlier reports that three men have been nabbed.

Mar 17: nine people were arrested by police in connection to the case; two arrested in Johor Bahru while seven were arrested outside Johor Bahru area

Mar 19: Two key suspects who are believed to be instrumental in arranging for the transportation of the toxic substances were arrested. Bringing the total to 11 with one suspect later released under bail after he is proven not related to the case.

The cleaning operation of the 1.5 kilometre stretch of the affected river was completed in the same day with a total of 900 tonnes of soil and 1,500 tonnes of polluted water were cleaned

Mar 25: Two main suspects comprising a Singaporean and a Malaysian were charged at the Sessions Court in Johor for disposing chemicals illegally into the river and their company, P Tech Resources was slapped with 15 charges to which they plead not guilty. Both have been charged earlier in the same court for conspiring with a lorry driver to dispose of scheduled wastes into the river.

Figure 8: Aerial View Of The Pollution At Sungai Kim Kim