

Pollution sources

Agricultural pollution

Agricultural pollution originates from the introduction of chemical fertilizers (rich in phosphates and nitrates), pesticides (insecticides and weed killers) and manure from stables in river flows and in the soil. The discharge of chemical fertilizers in rivers, lakes and seas enhances the eutrophication phenomenon. The introduction of pesticides poses the most serious threat as these are not very biodegradable, they deposit and concentrate in river flows destroying all forms of life. A greater attention from agricultural operators could substantially reduce this form of pollution that is particularly dangerous as it can regard also aquifers. To prevent this, the contribution of nitrates must be reduced and must be favoured the use of natural manure as also must be reduced the use of pesticides introducing biological fight to avoid excessive irrigation that leaches soil and makes necessary the use of fertilizers.

Industrial pollution

Pollution of industrial origin is caused by the discharge of toxic and non biodegradable substances coming from industrial processing such as cyanides originating from industries producing pesticides and weed killers, cadmium originating from companies producing batteries and accumulators, and chromium as a leftover of plating and tanning industries. Industrial pollution can derive from the discharge of water used in productive processes that contains high amounts of solid dissolved substances coming from leaching of solid waste landfills carried out by rainwater or by accidental breaks of tanks and/or pipes transporting very polluting products that flow directly into rivers or disperse in the soil and subsoil and eventually reach aquifers. To reduce industrial pollution it's necessary to purify water through filters and treatment tanks before discharging it and favouring, when possible, natural substances in purification processes.

Thermal pollution

There is also another form of industrial pollution of water that doesn't regard the content of polluting substances but temperature: thermal pollution. Industries, in fact, pour into the sea or into rivers hot water used for their processings. Cooling water is withdrawn from seas, lakes and rivers at a certain temperature and after use is returned at a higher temperature. The temperature rise in water bodies causes the alteration of aquatic ecosystems and the variation of vital processes. Moreover, it can lead to the death of bacterial fauna which is useful in self-purification processes of water and, in most serious cases, it can also lead to the death of a great number of fish. To reduce the negative effects caused by the discharge of cooling water, hot water produced by domestic heating or for the breeding of species requiring high temperatures should be reused.

Domestic pollution

Domestic water pollution is produced by the discharge of domestic sludge containing organic substances and soaps. These substances generally pour into superficial river flows but sometimes reach aquifers. It's possible to reduce waste water pollution thanks to purification. Discharges are channelled from sewers to treatment stations to abate pollutants before discharging water into rivers and seas. These purification systems, though, aren't always into force and, moreover, even where discharges are gathered and channelled can occur breaks or inefficiencies of septic pits, pipes or treatment plants that cause leakage of polluted water. Also phytoremediation, which uses specific plants that work as biological filters capable of reducing polluting substances, can be employed to abate pollutants present in waste water.

Hydrocarbon pollution

It's caused mainly by accidents on oil platforms and ships used for hydrocarbon transport but also by discharging into the sea of water used to wash tanks of tanker vessels. Crude oil and petroleum products form a waterproof film on water that prevents the exchange of oxygen between atmosphere and water causing damages to marine flora and fauna. Nowadays during transport over sea are used "double-hull" tankers to avoid leaks in case of accidents. The best international practices are adopted with regards to oil platforms to face or eventually adequately deal with any type of inconvenience.