FACT SHEET

Organic pollutants

What are organic pollutants?

Organic pollutants are organic molecules that occur in the environment, have proven harmful effects and originate from human activities.
The usage of some highly toxic pollutants that are very resistant against degradation has been internationally banned by the Stockholm Convention of the United Nations. This includes for example the agricultural application of the organochlorine pesticide DDT.
Organic pollutants may originate from many different products that are used in households, agriculture, aquaculture or by industries.

Where do they occur?

Organic pollutants occur in air masses, in surface waters and sediments, in groundwater and in soils. Some of these compounds are relatively resistant against degradation and remain intact in the environment for many years.
They become widely distributed in the environment as a result of their transport in water and air.
Some organic pollutants accumulate in the fatty tissue of living organisms including humans, and are found at higher concentrations at higher levels in the food chain. Such compounds could also occur in the fishery resources of Hainan coastal waters.

Origin of pollutants in Hainan coastal waters

Household pesticides

Personal care products

Ship paintings

Drugs and biocides used in aquaculture

Industrial emissions

Photos:
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Webpage
http://ecoloc.zmt-bremen.com

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Origin of organic pollutants in coastal waters

Municipal sewage from households may contain pharmaceutical drugs, personal care product ingredients, detergent residues, antimicrobials and household pesticides. The sewage is treated in municipal sewage treatment plants. Nevertheless, the treated sewage can still contain residues of organic pollutants, which are discharged into the rivers. The rivers then transport the organic pollutant loads into coastal waters.

Pesticides, pharmaceutical drugs and disinfectants used during *aquaculture production* may also enter the surface waters with the discharged aquaculture pond effluents.

Industries release wastewaters, which may contain chemicals used or obtained during the industrial production process.

Further pollutant sources of coastal waters are oil spills, agriculture, shipping traffic, dumped household wastes, military relics and oil platforms.

Sampling of water and sediment for organic pollutant analyses

Photos: L. Dsikowitzkly

What are the threats?

Organic pollutants can adversely affect the health of wildlife and of humans. As an example, the consumption of contaminated fishery resources can lead to human health problems.

A severe contamination of coastal areas can result in a declining abundance of fishes, mussels, snails and other aquatic organisms. This can be one cause for lower fishing income in this area.

Pollutants as indicators

Some chemicals are only used for one special purpose and can therefore be used to trace the emissions from a specific pollutant source in the environment.
An example is the compound DEET (diethyltoluamide), which is the active ingredient of insect repellents. It is used in high amounts by humans in tropical areas as protection against mosquito bites. It is washed off the skin during showering and is then a constituent of municipal sewage. The occurrence of DEET in coastal waters thus clearly indicates the input of municipal sewage from households, in which DEET is used.

Interesting links

Stockholm Convention
http://chm.pops.int

References

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