Attachment 4

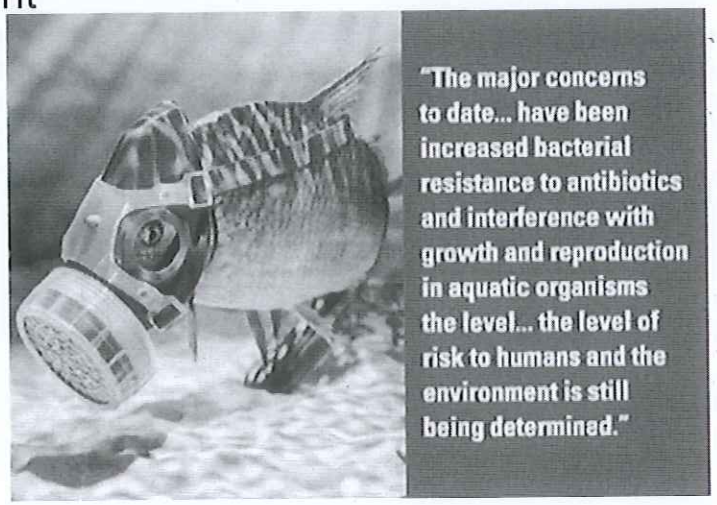
NO DRUGS DOWN THE DRAIN

Medications In The Environment

What are medications?

Medications, which are sometimes called pharmaceuticals in newspaper articles and research papers, include:

1. Prescription drugs such as **hormones** (birth control pills, estrogen replacement drugs, etc.), antidepressants, and antibiotics;
2. Over-the-counter medications such as pain relievers (aspirin, ibuprofen, etc.), cold/flu remedies, and antiseptics (germ killing liquids); and,
3. **Veterinary medicines**.



How do medications get into the environment?

Studies have found very small amounts of medications in surface water bodies (streams, rivers, lakes) across the country. Medications enter these water bodies from various sources that include animal feedlots, **land application** of organic materials and, also, **wastewater treatment plants** that treat residential, commercial, and/or industrial wastewater.

There are two ways that medications enter the **sewer system** and wind up at a wastewater treatment plant: (1) excretion by the human body in urine and feces and (2) disposal of unused or expired medications down the toilet or drain. Wastewater treatment plants are designed to remove **conventional pollutants** such as solids and **biodegradable** materials; they are not designed to remove man-made pollutants such as medications. Therefore, one way to reduce the level of medications in surface water bodies is to reduce the amount of medications entering the wastewater treatment plant. This can be done by educating residents and health care professionals that unused or expired medications should not be disposed of down the toilet or drain.

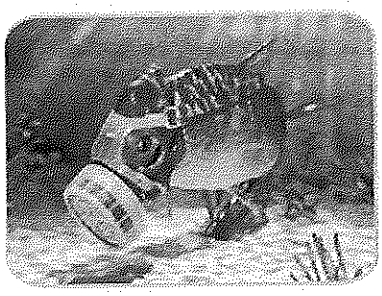
What are the impacts on human health and the environment?

Medications have been detected in very small amounts in surface water bodies (streams, lakes, and rivers) across the United States. The most recent extensive study of medications in surface waters was performed by the United States Geological Survey. (**http://toxics.usgs.gov/regional/emc/**) . A network of 25 ground-water and 49 surface-water sources of public drinking water suppy in 25 states and PuertoRico were sampled and analyzed for 124 emerging contaminants. At least one emerging contaminant was detected in 96% of the samples. Examples of medications found included acetaminophen, steroids, hormones, codeine, antibiotics, antimicrobials, and ibuprofen.

The major concerns to date regarding the presence of medications in surface water bodies have been increased **bacterial resistance to antibiotics** and interference with growth and reproduction in aquatic organisms such as fish and frogs. Aquatic organisms are sensitive to low levels of exposure and are particularly vulnerable when exposure occurs during developmentally sensitive times such as before birth and during juvenile stages of growth (**http://www.epa.gov/ppcp/**). Effects of exposure can include a gender ratio imbalance (e.g. more females than males within a given population); intersex conditions (the presence of both male and female reproductive organs within an individual organism); poor egg hatching success; decreased fertility and growth; and altered behavior (e.g. lethargy and disorientation).

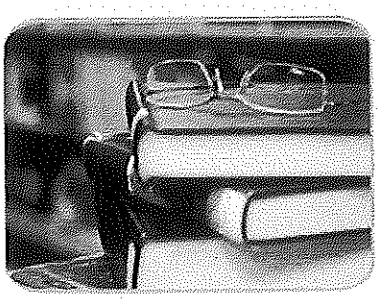
This is a complex issue and the level of risk to humans and the environment is still being determined. There are tens of thousands of medicinal products on the market with more being developed each year. It is not definitively known which particular medicinal compounds or mixtures of these are a problem or what the long-term risks are. However, research is ongoing and, in the meantime, it is prudent to limit the disposal of waste medications to the sewer in order to minimize the potential negative and irreversible impacts on the environment.

Link to our **Further Information Page** to learn more.



Medications in the Environment

Disposal Instructions



Further Information

In case of overdose or accidental poisoning, call the poison center at
1-800- 222-1222
24 hours/day

NO DRUGS DOWN THE DRAIN

Contact Us

City of Los Angeles
Household Hazardous Waste Collection Events and Electronics & Computer Recycling Events
1-800-98-TOXIC (1-800-988-6942)

Sanitation Districts of Los Angeles County
Public Information Services at (562) 908-4288, extension 2300

Orange County Sanitation District
Tom Gaworski, Source Control at (714) 593-7422

City of San Diego
Industrial Wastewater Control Program at (858) 654-4100

County of Los Angeles
Household Hazardous/Electronic/Universal Waste Collection Events
1-888-CleanLA

City of Riverside
City of Riverside Information Center at (951) 826-5311

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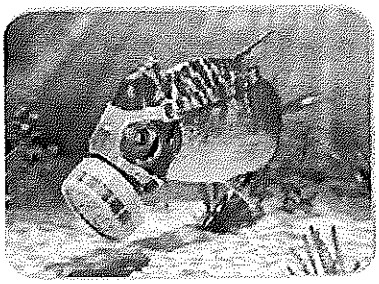

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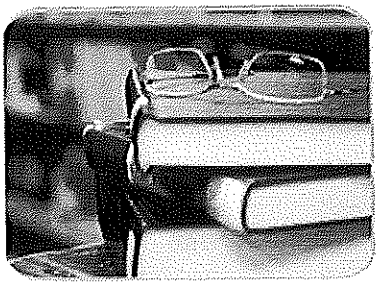

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