

Water – the basis of all life

Roche Position

Roche supports international and national efforts to promote water protection, conserve water reserves and improve access to clean drinking water in all countries.

The entire Group is committed to continually strive to further reduce discharge of toxic and poorly biodegradable substances and heavy metals. Wastewaters will continue to be discharged to receiving waters only if they fully comply with all relevant regulations, including pre-treatment requirements if necessary.

Roche is proactively addressing water protection issues specific to our industry through participation in several international and national bodies dedicated to studying the impact of trace chemicals, including pharmaceuticals, in surface waters and groundwater. These organizations include ECETOC, the European Centre for Ecotoxicology and Toxicology, Brussels, the EU 6th Framework Research Programme (Environmental Risk Assessments of Pharmaceuticals), the Swiss Experts' Commission for Environmental Toxicology and others. The topic frequently referred to as "pharmaceuticals in the environment" is clearly an issue of significant interest to Roche (http://www.roche.com/pharmaceuticals_in_the_environment.pdf). Pharmaceutical residues are present in surface waters and in some cases also in groundwater and drinking water at very low concentrations. This is due on the one hand to the poor biodegradability of certain drugs, and on the other to the enormous power of modern analytics. While there appears to be general agreement that the risk to humans from exposure to small concentrations of individual compounds is low, there is still much to learn about possible long-term effects of mixtures of pharmaceuticals, especially on aquatic organisms. As a pharmaceutical company, Roche is conscious of its responsibility and is therefore committed to obtain reliable data on our compounds and to use these data as a basis for integrated risk assessment and corresponding risk management measures to reduce emissions.

On a national and international level, Roche is funding research projects that have similar objectives, such as at ECETOC and the international Long Range Research Initiative on chemical safety.

On a local level, special programs to conserve water reserves and reduce water consumption have been introduced at various Group companies. Many of these programs were originally identified through our regular Group-wide eco-competitions, where prizes are awarded to employees based on the merit of their suggestions and the likelihood that their suggestions can be implemented at other sites within the Group.

The international situation

The basis of all life is water. Water covers much of the Earth's surface and total resources amount to 1386 million km³, although only just under 3% of this is fresh water. The bulk is accounted for by the salt water in the oceans. Of

the total amount of fresh water, however, only a small proportion is available as drinking water, the majority being locked in the polar ice caps and glaciers or existing as groundwater.

The Earth's drinking water reserves are thus limited and very unevenly distributed. As a result, about half a billion people are currently living in countries where clean water is scarce. Since access to clean drinking water and the availability of water for food production are basic preconditions for development, it is easy to recognize that water is a contributing factor to the ever-increasing gap between the "developed" and the "developing" regions of the world.

In most industrialized countries the availability of an uninterrupted supply of water is taken for granted. Rivers, lakes and groundwater are continually replenished by regular precipitation. While supply of this valuable resource has not typically been an issue, the quality of the water available is often compromised by various pollutants, many of which are generated as a result of industrial processes.

It has recently become readily apparent that the world is facing a true water crisis. Because of an ever-expanding population, the effects of climate change and the continued widespread irresponsible use of water, the impact of inadequate water supplies will be a significant issue in the years to come. Government awareness of this predicament continues to increase even in countries not directly affected, with mitigation measures being identified in an effort to reduce global impact.

In fact, water was the central topic of discussion at the World Summit on Sustainable Development (WSSD) in Johannesburg in summer 2002. The international community agreed to halve the number of people without access to clean water by 2015, and the private sector is also being encouraged to do its part by increasing its stake in achieving this goal. At the 4th World Water Forum in 2006 in Mexico City, governments were urged to lobby the UN Human Rights Council for a resolution establishing the right to water for all.

The situation at Roche

The availability of high-quality water is critical to Roche. The production of pharmaceuticals and diagnostics is simply not possible without clean water in sufficient amounts. Globally, the Roche Group needs approximately 110 million cubic meters of water each year to run its business. Approximately 10% of this is supplied from municipal systems, while we provide the remaining 90% ourselves from river water intake systems and groundwater wells. The water taken from rivers and wells is used primarily for cooling in production processes, and therefore does not typically come into contact with chemicals. At some sites, the water used for cooling is recirculated in closed loops and cooled in cooling towers or via heat recovery units. After thorough analysis and assessment it is discharged back into rivers.

Process effluent at Roche is treated in wastewater treatment plants. The vast majority of organic material in Roche wastewater is degradable and thus readily eliminated in wastewater treatment plants via biological treatment steps. If indicated, wastewater is pre-treated at the source prior to being discharged for further treatment. The resultant effluent sludge is separated, dewatered and incinerated or landfilled in compliance with the local regulatory requirements.

Since the early 1970s, Roche has continued to invest aggressively in the construction of modern wastewater treatment plants. For years these investments have resulted in a significant reduction in the total organic carbon (TOC) load discharged into receiving waters from Roche sites throughout the Group. The TOC removal rates of Roche wastewater treatment plants average over 90% and clearly exceed national regulations (see more details at http://www.roche.com/fact_sheet_emissions_into_water-08.pdf).

Many heavy metals are essential to various metabolic processes, but can lead, in excessive concentrations, to severe damage in plants, humans and animals. The ecological problem with heavy metals lies in their persistence; unlike most organic waste products, heavy metals cannot be degraded and may therefore enter the food chain. At Roche heavy metals are used as reagents or as components of catalysts. In these processes the metals are not consumed, but are for the most part regenerated or removed from the main wastewater stream. Although heavy metal discharges at Roche have historically been very low, we have been successful in recent years in reducing discharge of these pollutants even further with enhanced pre-treatment methods and chemical syntheses designed to limit the use of these materials.

Further information

The topic of water has been regularly addressed in the annual Roche Group Reports on safety and environmental protection and in the following sustainability reports. (http://www.roche.com/investors/annual_reports.htm).

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