

Roche's Position on Waste Management and Circular Economy

Background

Roche develops and offers high-quality medical and in-vitro diagnostic solutions for unmet medical needs. Our operations follow high environmental and sustainability standards, but they also generate waste. Some of this waste, if improperly handled, could potentially harm people and the environment, adversely affect local economies and increase Greenhouse gas production linked to climate change. Recognizing that such risks exist, Roche has established an effective Safety, Security, Health and Environmental protection (SHE) management system that includes internal guidelines to reduce the potential for negative impacts from our operations.

We require that our operations avoid generating waste as far as feasible. That commitment begins with the design of new products. All new pharmaceutical and diagnostic product design processes include the evaluation of ways to minimize waste from products and packaging, and encourage the use of recycled or recyclable material. When waste cannot be avoided or eliminated, Roche prefers to re-use or recycle waste; or in other words, to extend the value of the material for as long as possible, thus being consistent with the principles of Circular Economy.^{1, 2}

The European Commission describes Circular Economy as one “where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste is minimized.” The Ellen MacArthur Foundation has elaborated on this definition: “A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.”

Waste streams that arise from Roche's activities include both hazardous and nonhazardous waste. The former include materials from chemical, biological and physical processes. The latter includes household-type refuse, paper, cardboard, glass, plastics, green waste, scrap metal and/or uncontaminated building demolition debris.

Roche's “[Guidelines for the Assurance of Safety, Security Health and Environmental Protection \(SHE\) in the Roche Group](#)” define global waste handling concepts; including the guiding principle, that disposal should be safe and ecologically friendly. We prohibit our owned or operated sites and our business critical suppliers from using landfills to dispose of chemical and other hazardous waste fractions such as pharmaceuticals, byproducts or otherwise toxic or bio-hazardous materials.

Instead, Roche requires incineration to destroy waste if it cannot be recycled as incineration significantly reduces the volume, toxicity, and reactivity of most potentially harmful wastes.

¹ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS - Closing the loop - An EU action plan for the Circular Economy. Brussels, 2.12.2015 COM(2015) 614 final. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614> (accessed May 18, 2021).

² What is the Circular Economy? Available at: <https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy> (accessed May 18, 2021).

Stakeholders' Expectations and Concerns

Our stakeholders have diverse interests in the management of waste. We must consider these interests individually and in relation to one another to appropriately mitigate risks and comply with all applicable regulatory requirements.

Patients and other customers

Patients and other customers generate waste when using our pharmaceutical and diagnostic products. They expect Roche to reduce the quantity and toxicity of product waste, and to provide guidance on the responsible and proper management of the associated waste. We strive to meet these expectations in the design of our products and within all patient communications.

Communities

Releases of hazardous substances into the environment from mismanagement of wastes may result in potentially exposing people to chemicals. Because of this, people who work and live in the communities where Roche operates are important stakeholders. They expect Roche to manage waste responsibly, in accordance with state of the art practices as well as compliance with all applicable and relevant laws. These expectations were considered when developing this policy document, and other internal guidance.

Ecosystems

Scientific research demonstrates the importance of a healthy eco-system for the long-term welfare and prosperity. Mismanagement of waste may result in contamination of surface water, ground water, sediments and/or soils. This can potentially cause serious harm to plants and animals in our environment. The emission of methane, a "greenhouse gas", from waste decomposition within landfills has been proven to cause another form of harm through the adverse effects of global warming. To protect our environment, Roche follows all applicable regulatory requirements on discharges. As a steward of sustainability, Roche has established aggressive goals on the amount of wastes being deposited into landfills.

Regulatory authorities

Governments and their regulating agencies have the mandate to protect their citizens and the environment. Laws and regulations specify how to manage waste in order to prevent environmental risks and to encourage the principles of Circular Economy. Roche is committed to achieving full compliance with all applicable rules and regulations.

Scientific community

Scientists and engineers explore the consequences of waste handling to inform decision making, develop new technologies, and support the development of a Circular Economy. Roche also engages with the scientific community both as an individual company and through our membership in various industry peer groups.

Investors

Investors strive to reduce their financial and non-financial risks resulting from the company's waste generation, handling and disposal. It is important that investors are familiar with Roche's waste management philosophy, measures and corresponding key figures to evaluate the risk of their investment in the company. Roche demonstrates its progress through our annual Sustainability Report and by reporting [Our SHE Goals and Performance](#) on our website.

Roche Position

We strive for eco-efficient and sustainable methods to reduce waste generation. Such solutions not only decrease our company's environmental footprint but also yield economic benefits such as reduction in raw materials and disposal costs. Even with those measures, our operations generate waste. Roche has globally adopted seven principles and practices surrounding waste management. In order of priority, they are:

1. **Avoid**

- using environmentally harmful, hazardous or toxic materials in manufacturing or other Roche operations, e.g. eliminate the use of chlorinated solvents, heavy metals, and substances of very high concern (SVHCs) or banned substances.
- creating waste in general by optimizing business, product design, and manufacturing processes.

2. **Reduce/Minimize** the consumption of raw materials, natural resources and the amount of waste generated in all business, product design, and manufacturing processes.

3. **Re-use** products³, byproducts or packaging, for the original purpose or for a similar purpose, without significantly altering the physical form of the object or material.

4. **Recycle**, e.g. plastic recycling, recovery and recycling of solvent mixtures, packaging materials, etc. and design products to use recycled materials and incorporate recyclable components when possible.

5. **Down-cycle** to a lower-value product (e.g. creation of newspaper from office paper) when appropriate.

6. **Thermally destroy** waste by incineration with state-of-the-art flue gas treatment. Commercially available options can include:

- **Incineration with heat recovery** (preferred) of non-recyclable wastes with high-energy content making use of the waste's energy content.
- **Incineration** without heat recovery.

7. **Landfill** should be a last resort disposal option reserved only for inert material, such as incineration residues, and clean building rubble or other non-recyclable waste fractions not suitable for incineration.

Special care must be applied to returned Roche products, which must be completely destroyed³. Precautions must be taken to prevent these products and related packaging materials from entering illegal or illicit supply channels.

³ Diagnostic instruments can be refurbished and re-used. For the pharmaceutical products this is not possible, as they are consumed.

Roche requires all waste service providers to meet stringent requirements for SHE performance, effective risk management, transparency, financial solvency and legal compliance. We reinforce these performance expectations with regular SHE-audits and follow-up reviews.

Country-specific concerns with certain waste disposal technologies, e.g. incineration, may make compliance with our group-wide waste management strategies challenging. For example, waste incineration may not be an option in some countries. Incineration capacity may be limited in many other countries. Landfilling may be common or even the only waste management option. When capacity is limited due to negative public perception, Roche facilities and affiliates are encouraged to support local actions or advocacy efforts. Stakeholders in these countries focus these advocacy efforts toward creating a more favorable perception of responsible incineration. Incineration is considered the best form of disposal for waste fractions that cannot be reused or recycled. Facilities might also consider making trans-boundary shipments of hazardous wastes to state-of-the-art recycling or incineration facilities in another country. Any such shipments must strictly follow the legal requirements of the delivering and receiving countries. Furthermore, the environmental risks and impacts resulting from the trans-boundary transportation of hazardous waste must be considered in the evaluation of managing this waste.

Roche Affiliates

Roche requires its owned and operated subsidiaries (also known as “affiliates”) to use resources responsibly and protect employees from direct and indirect risks related to waste management. Roche affiliates must obey all applicable laws and regulations and ensure that all risks are identified and properly mitigated. Our affiliates have the responsibility to be good corporate citizens and neighbors to surrounding communities and implement state of the art waste handling practices. Waste management actions and principles implemented by Roche affiliates include the following:

1. **Segregation** of wastes preferably at the source, avoiding commingling/mixing of different waste fractions;
2. **Tracking and Documentation** of type, quality, quantity and treatment/disposal pathway of waste at affiliate-level;
3. **Pre-treatment of specific waste materials** to render them non-hazardous, e.g. decontaminating used diagnostic equipment prior to final disposal;
4. **Labeling**: Roche facilities must meet all legally applicable international and local labeling requirements and regulations for dangerous goods/waste;
5. **Storage** facilities for hazardous, toxic, biohazardous waste and waste containing controlled substances must be properly designed, dedicated, and secured with restricted and controlled access, as appropriate to their hazard potential. Roche facilities must provide adequate fire protection, firefighting water containment, smoke/heat detection systems and emergency response provisions for these facilities;
6. **Collection** and shipment for offsite disposal is required to be done regularly and in compliance with relevant regulations so that waste does not accumulate in large quantities on site;
7. **Transportation** to waste treatment and disposal facilities must be organized under strictly controlled conditions appropriate to the type of waste; and

8. **Incineration** facilities must hold all required licenses and meet global state of the art technical/destructive, safety, and regulatory standards.

Outlook and Status

Roche has long-established corporate goals to reduce the generation of wastes. For the past goal period from 2015 to 2020 (with 2015 as the baseline), Roche has reduced:

- General (non-hazardous) wastes per employee by 26%; and
- Chemical (hazardous) waste disposal to landfill by 99%.

For the period from 2020 to 2025 (with 2020 as the baseline), Roche aims to:

- Reduce general (non-hazardous) waste (kilograms per employee, without construction waste) by 10 %;
- Increase recycling rate of general waste to ≥ 80 %; and
- Reduce plastic waste (separated fraction in general waste in absolute tons) disposal by 10 %.

Roche engages its affiliates in establishing Group-wide goals, and sets the expectation that each affiliate contribute by establishing local goals and action plans.

To measure and monitor performance and progress towards the goals, Roche annually collects waste-related data from our own operations and from our affiliates. This data is used within our SHE reports and to respond to questionnaires from rating agencies and/or inquiries from environmental groups, investors and authorities who assess our SHE performance.

Current Engagement and Initiatives

Sustainable management of waste streams has become increasingly important. The **United Nations (UN) Sustainable Development Goals (SDGs)**, especially goal #12 “Responsible Consumption and Production”, demand waste reduction as well as recycling and the safe treatment of remaining waste streams. Roche is committed to comply with the SDGs.

Roche minimizes waste by the way it designs its products and packaging. We created a Product Stewardship Performance (PSP) tool, which our product development teams use to score and improve product design and performance at each stage of the product life cycle. The scoring process is in alignment with important business, sustainability and product stewardship objectives. Those objectives include using recycled or recyclable materials, less toxic chemistry, and minimizing waste generation.

Roche supports an array of activities with its program of [becoming EverGreener](#), which includes waste reduction initiatives.

In addition to these company-wide initiatives, Roche has undertaken the following initiatives related to waste generation and management:

- To avoid improper disposal of unused pharmaceuticals, Roche participates in **Drug “Take-Back” programs** in various countries. Please refer to the [Roche Position on Product Stewardship](#) for further details.
- Roche is concerned with potentially negative effects that releasing pharmaceuticals may have on the environment. Pharmaceuticals primarily enter the environment through patient use and excretion; however, they may end up in the environment because of improper disposal or unexpected releases during manufacture despite precautions taken. Please refer to the [Roche Position on Pharmaceuticals in the Environment \(PiE\)](#) for further details.
- The [Green Biophrama Program](#) of our Genentech subsidiary aims to reduce our environmental impact through responsible use of materials, chemicals, water and energy in laboratories and within our manufacturing processes. In addition, we strive to avoid or reduce raw materials needed and the overall consumption of resources in Roche’s manufacturing processes for both biologics and small molecules. By doing this, we avoid or minimize any environmentally harmful substances.
- Roche is an active member of the [American Chemical Society Green Chemistry Institute Pharmaceutical Roundtable](#) where members work to catalyze the integration of Green Chemistry and Engineering in the pharmaceutical industry.
- A systematic program to optimize chemical syntheses of new Active Pharmaceutical Ingredients (APIs) - the Roche Environmental Awareness in Chemical Technology (REACT) – is working under the lead of Roche’s Research and Development department.

Contacts

Dr. Richard Huerzeler, Chief Environment and Remediation Officer, Group SHE:
richard.huerzeler@roche.com, +41 61 688 07 46, Basel, Switzerland.

Dave Herrmann, Principal Environmental Technical Specialist, Group SHE:
dave.herrmann@roche.com, +1 973 890 2243, Little Falls, NJ / USA.

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