



Safe management of wastes from health-care activities

A summary



World Health
Organization

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Acronyms and abbreviations

AMR	antimicrobial resistance	PCDDs	polychlorinated dibenzo-p-dioxins
BAT	best available techniques	PCDFs	polychlorinated dibenzofurans
BEP	best environmental practices	POPs	persistent organic pollutants
ESM	environmentally sound management	PPE	personal protective equipment
HBV	hepatitis B virus	PVC	polyvinylchloride
HCV	hepatitis C virus	SDGs	Sustainable Development Goals
HCWM	health-care waste management	TEQ	toxic equivalent
HEPA	high efficiency particulate air	UN	United Nations
HIV	human immunodeficiency virus	UNEP	United Nations Environment Programme
IPC	infection prevention and control	UNICEF	United Nations Children's Fund
ISWA	International Solid Waste Association	WASH	water, sanitation and hygiene
JMP	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation	WHA	World Health Assembly
PCBs	polychlorinated biphenyls	WHO	World Health Organization

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1. Introduction

Safe health-care waste management is fundamental for the provision of quality, people-centred care, protecting patient and staff safety and safeguarding the environment. As part of broader water, sanitation and hygiene (WASH) and infection prevention and control (IPC) efforts, safe management of health-care waste reduces health-care-related infections, increases trust and uptake of services, increases efficiency and decreases cost of service delivery. In line with the UN Sustainable Development Goals (SDGs), particularly SDG 3 on health, SDG 6 on safely managed water and sanitation and SDG 12 on sustainable consumption and production, the *Water, sanitation and hygiene (WASH) in health care facilities: Global action plan* aims to ensure that all health-care facilities have basic WASH services by 2030 (WHO & UNICEF, 2015a). This includes safe health-care waste management involving segregation, collection, transportation, treatment and waste disposal.

The WHO/UNICEF Joint Monitoring Programme (JMP)¹ has the official mandate of reporting on progress towards achieving SDG 6 on safely managed water and sanitation. This will involve capturing and reporting data from households, schools and health-care facilities. Harmonized monitoring indicators to assess WASH services in health-care facilities include one on health-care waste and specifically, proper segregation and safe treatment and disposal.² WHO and UNICEF are working with partners to ensure these indicators are used in national health facility assessments and health monitoring information systems.

This document highlights the key aspects of safe health-care waste management in order to guide policy-makers, practitioners and facility managers to improve such services in health-care facilities. It is based on the comprehensive and detailed WHO handbook *Safe management of wastes from health-care activities* (WHO, 2014), and also takes into consideration relevant World Health Assembly (WHA) resolutions, other UN documents and emerging global and national developments on WASH and IPC.

Five guiding principles are widely recognized as the basis for effective and controlled management of waste. These principles have been used in many countries when developing their policies, legislation and guidance: the “polluter pays” principle; the “precautionary” principle; the “duty of care” principle; the “proximity” principle; and the “prior informed consent” principle.

1. To learn more about JMP and read recent reports visit: <http://www.wssinfo.org/>

2. To view the indicators please visit the WASH in health-care facilities knowledge portal: <http://www.washinhcf.org/resources/tools/>

Ideally, all health-care waste management practices seek to implement environmentally sound management (ESM) of hazardous waste or other waste,³ best environmental practices (BEP)⁴ and best available techniques (BAT)⁵ in accordance with the Basel and Stockholm conventions and relevant national regulations and requirements. Nevertheless, changes and improvements to waste management practices must be made within the financial and technical capacity of any health-care system. This might include making small, incremental improvements, as well as planning for more significant, longer term improvements to obtain optimal options, which may only be possible once certain conditions have been reached.

Basel Convention (UNEP, 1989): The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal is the most comprehensive global environmental treaty on hazardous and other wastes. It has 184 Member Countries (Parties) and aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movements and disposal of hazardous and other wastes.

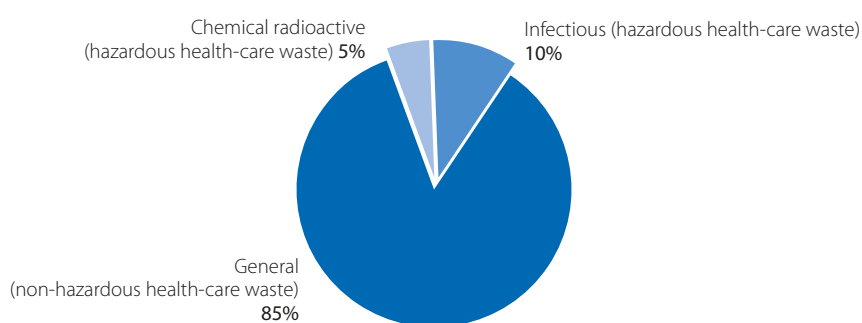
Stockholm Convention (UNEP, 2004): The Stockholm Convention on Persistent Organic Pollutants (POPs) is a global treaty to protect human health and the environment from highly dangerous, long-lasting chemicals, by restricting and ultimately eliminating their production, use, trade, release and storage. The Convention also addresses unintentional chemical by-products, including polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDDs and PCDFs). It has 180 Member Countries (Parties).

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3. ESM: Taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes (Basel Convention).
 4. BEP: The application of the most appropriate combination of environmental control measures and strategies (Stockholm Convention).
 5. BAT: The most effective and advanced stage approaches to preventing and, where that is not practicable, generally to reducing releases of chemicals listed in Part I of Annex C and their impact on the environment as a whole (Stockholm Convention).

2. Health-care waste categories and risks

About 85% of the waste produced by health-care providers is comparable to domestic waste and usually called “non-hazardous” or “general health-care waste”. It comes mostly from the administrative, kitchen and housekeeping functions of health-care facilities and may also include packaging waste and waste generated during construction and maintenance of health-care buildings. The remaining 15% of health-care waste is regarded as “hazardous” and can pose a number of health and environmental risks.

Figure 2.1 Typical waste composition in health-care facilities



Poor management of health-care waste exposes health-care workers, waste handlers and the community to infections, toxic effects and injuries. There is also a potential for spreading drug-resistant microorganisms from health-care facilities into the environment through poor health-care waste management (WHO, 2015a). In 2015, a joint WHO/UNICEF assessment found that just over half (58%) of sampled facilities from 24 countries had adequate systems in place for the safe disposal of health-care waste (WHO & UNICEF, 2015b). Sharps and, more specifically, needles are considered the most hazardous category of health-care waste for health-care workers and the community at large, because of the risk of needle-stick injuries which carry a high potential for infection (WHO, 2006).⁶

6. The risk of infection following a needle-stick injury with needle from an infected source patient is ~0.3% for HIV, 3% for hepatitis C and 6–30% for hepatitis B (WHO, 2003a).

Table 2.1 describes the different hazardous and non-hazardous waste categories (with examples) and the associated risks.

Table 2.1 Categories of health-care waste

Waste categories	Descriptions and examples
Hazardous health-care waste	
Infectious waste	Waste known or suspected to contain pathogens and pose a risk of disease transmission, e.g. waste and waste water contaminated with blood and other body fluids, including highly infectious waste such as laboratory cultures and microbiological stocks; and waste including excreta and other materials that have been in contact with patients infected with highly infectious diseases in isolation wards.
Sharps waste	Used or unused sharps, e.g. hypodermic, intravenous or other needles; auto-disable syringes; syringes with attached needles; infusion sets; scalpels; pipettes; knives; blades; broken glass.
Pathological waste	Human tissues, organs or fluids; body parts; foetuses; unused blood products.
Pharmaceutical waste, cytotoxic waste	Pharmaceuticals that are expired or no longer needed; items contaminated by, or containing, pharmaceuticals. Cytotoxic waste containing substances with genotoxic properties, e.g. waste containing cytostatic drugs (often used in cancer therapy); genotoxic chemicals.
Chemical waste	Waste containing chemical substances, e.g. laboratory reagents; film developer; disinfectants that are expired or no longer needed; solvents; waste with high content of heavy metals, e.g. batteries, broken thermometers and blood pressure gauges.
Radioactive waste	Waste containing radioactive substances, e.g. unused liquids from radiotherapy or laboratory research; contaminated glassware, packages or absorbent paper; urine and excreta from patients treated or tested with unsealed radionuclides; sealed sources.
Non-hazardous or general health-care waste	
	Waste that does not pose any specific biological, chemical

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