



## Introduction

Modern recycling management is a fairly young discipline, but it has already achieved some remarkable successes. As recently as the 1960s, there were more than 6,000 rubbish dumps in Baden-Württemberg. Fifty years ago, the Parliament of Baden-Württemberg passed legislation governing waste for the first time, thus laying the foundation for systematic waste management with the aim of protecting the environment. In the early days of the waste legislation, the emphasis was on containment of unstructured landfill sites in order to prevent contamination of water bodies and protect the health of the local residents. In subsequent years waste legislation and waste management focused increasingly on conservation of resources and recycling. These activities have now won international recognition. Today waste management in Baden-Württemberg is safe and friendly to the environment. Moreover, waste has become a valuable source of energy and raw materials, of increasing importance to the economy. The state is acutely aware of the importance of recycling management, as are the urban and rural districts. Thus the system of waste disposal and recycling is being continuously enhanced. Waste management and resource management are constituent



parts of Baden-Württemberg's Environmental Plan, Waste Management Plan, Integrated Energy and Climate Protection Concept and sustainability strategy. These plans set forth the underlying principles, goals and measures for sustainable, environmentally sound development. In this leaflet the Ministry of the Environment, Climate Protection and the Energy Sector would like to give you a brief overview of the waste legislation in Baden-Württemberg, the types of waste generated and the means of disposal. I hope that this description of our outstanding recycling management system will raise your interest. Additional information is available on our Web site and in many brochures.

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## The principles

Recycling management is governed by a variety of legislation: EU law, federal German law, law of state Baden-Württemberg and municipal law. This legislation specifies how household waste, industrial waste and hazardous waste are to be treated with minimum impact on the environment.

In Germany waste avoidance and waste disposal are governed by the Kreislaufwirtschaftsgesetz [Closed Substance Cycle Act], which came into effect in 2012. Whereas the previous version of this act focused on minimizing the impact of waste on the environment and human health through proper disposal, the new act emphasizes waste avoidance and, whenever possible, waste recovery. It calls for the use of state-of-the-art technology, and when waste cannot be avoided it stipulates that materials be recycled as effectively as possible or used as an energy source. A key element is product responsibility, which applies to manufacturers and sellers and commences in advance of waste disposal.

The import and export of waste is governed by Regulation (EC) No. 1013/2006 on shipments of waste and the German Abfallverbringungsgesetz [Waste Shipment Act]. Only certain wastes for recovery may be exported to other countries or imported from them without permission. An application (a so-called notification) and a permit are required for wastes which are destined for disposal or which, depending on their properties, are subject to more stringent recovery requirements before they can be disposed of in other countries. The authorizing agency in Baden-Württemberg for such waste transports is the Sonderabfallagentur Baden-Württemberg GmbH (SAA).

## Addresses

Information and publications on waste can be found on the Web site of the Ministry of the Environment:  
[www.um.baden-wuerttemberg.de](http://www.um.baden-wuerttemberg.de), then click on "English", "Waste", "Service" and "Publications".

Data source:  
[www.statistik-bw.de/UmweltVerkehr/](http://www.statistik-bw.de/UmweltVerkehr/)

Other Internet sites:  
[www.saa.de](http://www.saa.de)  
[www.lubw.baden-wuerttemberg.de](http://www.lubw.baden-wuerttemberg.de)  
[www.gewerbeaufsicht.baden-wuerttemberg.de](http://www.gewerbeaufsicht.baden-wuerttemberg.de)  
[www.altfahrzeugstelle.de](http://www.altfahrzeugstelle.de) (GESA)  
[www.grs-batterien.de](http://www.grs-batterien.de) (GRS)

Information on municipal authorities (urban and rural districts):  
[www.landkreistag-bw.de](http://www.landkreistag-bw.de)  
[www.staedtetag-bw.de](http://www.staedtetag-bw.de)

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# Kreislaufwirtschaft in Baden-Württemberg

## Closed Cycle Waste Management in Baden-Württemberg



Baden-Württemberg

MINISTERIUM FÜR UMWELT, KLIMA UND ENERGIEWIRTSCHAFT

### Product responsibility

The manufacturers and sellers of products are responsible not just for their development and manufacture, but also for their disposal.

The principle of product responsibility – anchored in the Closed Substance Cycle Act – is to conserve resources through waste avoidance and a wide-ranging and intensive recovery of waste. Manufacturers of goods must consider the life cycle of their products when deciding on production strategies. Integrated product design entails manufacturing goods and designing products in such a way that, at the end of their life, the materials and substances can be safely returned to the manufacturing process or – if this is not possible – be sent for disposal in a manner that has minimum impact on the environment. The ordinances and acts referred to below provide specific rules for products and the waste arising from them:

#### VERPACKUNGSVERORDNUNG [ORDINANCE ON THE AVOIDANCE AND RECOVERY OF PACKAGING WASTES]

Since 1991 every manufacturer or seller has been responsible for collecting, sorting and recycling packaging materials. Ten competing "dual systems" are in use today for the return and recycling of packaging waste.

#### ALTFahrzeugverordnung [END-OF-LIFE VEHICLES ORDINANCE]

Since 2007 vehicle manufacturers have been obliged to take back from their last owner, free of charge, any end-of-life vehicles that they manufactured. End-of-life vehicles can only be returned to companies that are certified for this purpose and are suitably equipped for dismantling and shredding. Certified companies are listed in the "Gemeinsame Stelle Altfahrzeuge" (Clearing House for End-of-Life Vehicles, GESA).

#### ALTÖLVERORDNUNG [WASTE OIL ORDINANCE]

This ordinance is the oldest from the area of product responsibility and combines the aims of environmental protection with those of resource management. Sales outlets for lubricating oil are obliged to take back, without charge, waste engine oil and transmission oil in the same amount as they sell unused oil.

#### ELEKTRO- UND ELEKTRONIKGERÄTEGESETZ [ELECTRICAL AND ELECTRONIC EQUIPMENT ACT]

Consumers of waste electrical and electronic equipment (e-waste) can return such equipment to municipal collection points free of charge. Manufacturers of this equipment must bear the costs of disposal of old electrical and electronic equipment within the framework of product responsibility. If the equipment cannot be reused, it has to be recycled in an environmentally safe manner according to the state of the art.

#### BATTERIEGESETZ [BATTERY ACT]

Users must not dispose of used batteries in the normal household waste. Since 1998, battery manufacturers have been obliged to take back used batteries without charge and to recycle them. Manufacturers have set up a return system covering the entire country. Used batteries must be returned to the point of sale or to collection points of public waste disposal bodies.

#### ALTHOLZVERORDNUNG [WASTE WOOD ORDINANCE]

Waste wood must be either recycled or used as an energy source. It is grouped into different categories, depending on the treatment and type of surface. Waste wood that contains harmful substances must be disposed of in special facilities equipped for purification of emissions.

### Household waste

The new Closed Substance Cycle Act determines which corporate bodies or enterprises are responsible for the recovery and disposal of different types of waste.

The treatment of waste originating from households (in particular bulky waste and organic waste) is the most important of the duties of the public waste disposal bodies. In addition, they are responsible for the disposal of commercial waste and building waste (excavated material and demolition waste) if recovery is not possible. The recovery of domestic waste originating from commercial activities falls under the responsibility of the waste producers.

The public waste disposal bodies in Baden-Württemberg are the 44 urban and rural districts or their special-purpose associations. They decide on the most appropriate method of waste disposal within their area of responsibility. They set up and manage the required waste recycling and disposal facilities or use the facilities of commercial enterprises that they have entered into disposal agreements with. In five rural districts, responsibility for waste disposal has been transferred fully or partially to the municipalities.

The municipal waste by-laws stipulate the details of waste collection and the waste fees that must be paid for disposal services. Information on waste quantities, current disposal fees and facility capacities is provided in the annual waste reports.

Depositing of organic municipal waste in landfill sites has been prohibited since mid 2005 under the Deponieverordnung [Landfill ordinance]. Domestic waste and comparable waste may only be deposited to landfill after pre-treatment.

The number of landfill sites in use will continue to diminish because of the considerable decline in the need for landfill volume. Incineration is the most important waste treatment method; mechanical-biological pre-treatment is another possibility. Incineration residues like ashes and slags may be utilized or landfilled. Most of these materials are used as backfill for underground cavities. They also contain easily recoverable metals.

To permit long-term planning of waste disposal, the Ministry of the Environment will extend the 2013 subplan for municipal waste in the waste management plan up to 2025. The public waste disposal bodies will then adapt their own waste management concepts to these objectives and develop their waste disposal systems in accordance with state planning.



### Commercial and industrial waste

Waste producers are responsible for recovering their own commercial and industrial waste, i.e. producers must recycle waste or entrust it to suitable disposal companies. In line with the recycling and recovery imperative of the Closed Substance Cycle Act, the Gewerbeabfallverordnung [Commercial and Industrial Waste Ordinance] obliges producers of commercial and industrial waste, including construction and demolition waste, to keep specific waste fractions separate and recycle them or to collect them and pre-treat them through subsequent sorting such that the waste can be very largely recovered. Mixed industrial waste may only contain certain waste fractions, even if it is to be used as a source of energy. Under the Commercial and Industrial Waste Ordinance, waste that cannot be recovered is handled by the public waste disposal bodies, whose by-laws specify the use of residual waste containers.



### Hazardous waste

Waste is classified as hazardous if it is particularly dangerous to humans, the air or water bodies, or if it is explosive or combustible. Such waste is generated primarily in commercial and industrial production processes. Other sources are highly contaminated construction rubble and excavated soil. In the past it was called special waste. To a lesser degree hazardous waste is also generated in households – examples include residues of solvents, acids, alkalis, wood protection agents and pesticides, as well as other waste contaminated with harmful substances. Under the municipal waste by-laws, hazardous waste is strictly excluded from the collection of domestic waste and must be collected separately and disposed of in an environmentally compatible way.

Because of its danger, more stringent requirements are placed on the recovery or disposal of hazardous waste than on the disposal of domestic waste. For this reason, the disposal of hazardous waste must be verifiable. The disposal process is managed by the Sonderabfallagentur Baden-Württemberg GmbH (SAA).

If this waste is not recovered but instead sent for disposal, then it is subject to the Sonderabfallverordnung [Hazardous Waste Ordinance] and is dealt with by the central facility in Baden-Württemberg (the hazardous waste landfill site in Billigheim) or a hazardous waste incineration plant. This requirement does not apply to hazardous household waste. The private disposal enterprises in Baden-Württemberg have set up special plants for the pre-treatment and recycling of hazardous wastes, primarily physicochemical treatment systems.

# Total generation of waste in Baden-Württemberg 2011

## Waste quantities:

In 2011, approximately 40.6 million tonnes of waste were generated in Baden-Württemberg. This waste was either left to the public waste disposal bodies or reported to the SAA in the hazardous waste disposal verification process or notification process for exported wastes. The figure also includes non-hazardous waste recovered via trade disposal companies, which does not have to be handled by the public waste disposal bodies. The only statistics available for it are those provided by the State

Statistical Office of Baden-Württemberg. Included in this category are excavated material used for backfilling quarries, construction rubble used to replace sand, gravel, crushed stone or wet mix aggregate as construction material, and production-specific waste such as metal scrap, waste paper, waste wood or plastics that enter production processes again or are directly incinerated.

## Disposal paths:

### → INCINERATION

Energy recovery or thermal treatment in waste-fired power stations. Also co-incineration of processed waste in power stations or cement kilns.



### → LANDFILL

Above-ground storage of waste on landfill sites – class 0 (uncontaminated excavated soil), classes I and II (non-hazardous waste, previous landfill sites for demolition waste and municipal waste), class III (hazardous waste landfill) and underground storage (class IV), including storage of waste in mines.



### → MBT

Mechanical-biological treatment of waste.



### → RECOVERY

Use of waste as a direct substitute for raw materials (e.g., construction waste recycling, use of scrap, waste paper, plastic or waste wood), bio waste and green waste treatment. Also mechanical waste treatment processes, such as sorting of waste or dismantling of equipment, which gives rise to various material flows for further recycling or use as an energy source.



### → PCT

Physicochemical treatment of hazardous waste.



### → OTHER RECOVERY

Interim storage of hazardous waste, biological soil treatment and treatment methods other than physicochemical treatment.



## 4.0%

### hazardous waste

type of waste	volume	recovery	waste disposal
	in 1000 tons		
contaminated soils and building rubble	806.1	596.0	210.1
hazardous waste from production and waste treatment	818.7	633.2	185.5
	1624.8	1229.2	395.6

## 14.4%

### household waste

type of waste	volume	recovery	waste disposal
	in 1000 tons		
household and bulky waste	1555.0	1555.0	0.0
organic waste	1372.5	1372.5	0.0
recyclable material	1779.3	1779.3	0.0
electrical and electronic equipment	80.3	80.3	0.0
other household waste	1075.8	776.5	299.3
	5862.9	5663.6	299.3

## 4.8%

### commercial and industrial waste

volume	recovery	waste disposal
in 1000 tons		
1939.5	1770.4	169.1

**40 644 200 t**

## 76.2%

### construction and demolition waste

type of waste	volume	recovery	waste disposal
	in 1000 tons		
soils and stones (excavated soil)	21147.2	17364.1	3783.1
building rubble, roadway rubble, other building rubble and demolition waste	9828.1	9352.1	476.0
	30975.3	26716.2	4259.1

## 0.6%

### sewage sludge from municipal sewage plants

volume	energy recovery	agriculture	cultivation	other
in 1000 tons				
241.7	217.9	5.3	16.2	2.3