



# DISPOSAL IS A MATTER OF TRUST



Who we are



What we value



What we do



# IAG

Ihlenberger  
Abfallentsorgungs-  
Gesellschaft mbH



## We guarantee disposal-safety

Responsibility and sustainability determine our success.

Disposal is a matter of trust - trust in our expert skill and in our accountability for mankind and the environment. Therefore, long-term disposal-safety involves harmonising modern technology with ecological and social responsibility at our site Ihlenberg.

### Corporate philosophy

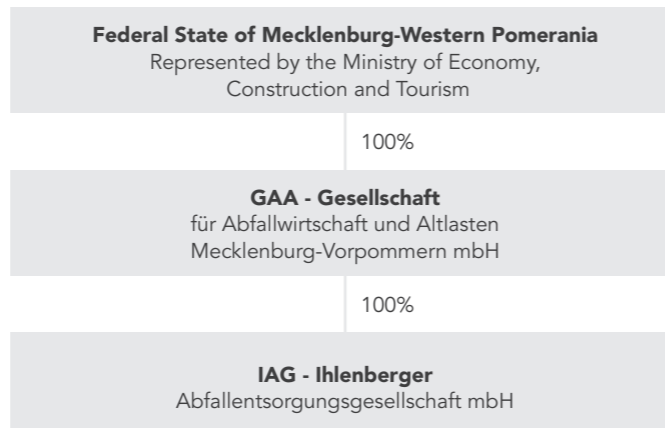
Our commission and our business revolves on the disposal and treatment of waste, with a focus on landfilling. Our tasks comprise guaranteeing disposal-safety, operating the Ihlenberg landfill at highest possible standards and responsibly fulfilling the resulting recultivation and aftercare obligations.

- We advocate responsibility for mankind and environment. That is the guideline for our work.
- We meet the needs of our customers.
- We set value on acceptance.
- We use changes as chances for progress.
- We network with transparency and respect.
- We base our decisions well considered and target-oriented.

### Legal relations

Under company law, IAG mbH is a 100% subsidiary company of GAA - Gesellschaft für Abfallwirtschaft und Altlasten Mecklenburg-Vorpommern mbH, a waste management company based in Selmsdorf.

GAA mbH is, in turn, a 100% subsidiary company of the Federal State of Mecklenburg-Western Pomerania. The Ministry of Economy, Construction and Tourism of the Federal State of Mecklenburg-Western Pomerania performs the proprietary role.



### Occupational safety

Our decisions and tasks are guided by the responsibility for our employees. Human beings are the core – making occupational safety an important part of our corporate culture. Work and fire safety have top priority at our site.

Those who work with hazardous substances must master them. All our employees are trained regularly in the safety measures relevant to their tasks. Our goal is clearly defined: zero work accidents at our operating site. Regular safety inspections in all business areas and the elimination of potential sources of danger are compulsory as effective measures for the prevention of accidents at our site Ihlenberg.

Our clearly structured emergency organisation ensures an immediate and effective reaction in such a case. Our first-aiders are continuously trained and the site is equipped with cutting-edge first-aid equipment, such as two defibrillators.

It is obligatory that all employees wear their personal protection gear. Depending on the working environment, this includes, for example, head protection, respiratory protection with a particle filter mask, gloves and disposable overalls in different protective categories, puncture-resistant work footwear and, of course, high-visibility safety clothing. Moreover, our employees apply blower-supported respiratory protection in exposed areas and individually customised ear protection - so-called protective ear moulds. The cabins of engineering machines are equipped with special filtered ventilation systems to protect the colleagues operating them against hazardous substances.

### Health management

Our social responsibility reaches from the creation of an employee-friendly, safe working environment to preventative health protection measures such as:

- preventative occupational health check-ups for early recognition of illnesses
- regular biomonitoring
- on-going toxicological task-assessment
- allowances for health-preventing trainings offered by public health insurances such as back therapy and stress counseling
- educational offers from occupational physicians on topics such as addiction prevention, high blood pressure etc.
- a company sports group
- healthy, balanced nutrition in our staff canteen
- free water dispensers



## Our sales team

Make use of expert advice for proper disposal.

Our sales team has extensive experience in waste disposal proceedings, originating from different sources such as residues from production processes, the refurbishment or deconstruction of shut-down plants. We are entrusted with different state-specific, legislative provisions and requirements.

We are ready to attend to your disposal queries. We support you during the preparation, implementation and post processing of your disposal order. Call us or send us your queries - we will take care of your disposal order reliably, properly and promptly:



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## Disposal solutions

Waste disposal is a social responsibility.  
We guarantee disposal-safety - for years to come.

### Our service for you at the Ihlenberg site:

Our range to TREAT, RECYCLE, STORE and DISPOSE OF waste comprises more than 500 different waste categories. We are specialised in:

#### POWER PLANT WASTE DISPOSAL

We treat and dispose your power plant waste such as:

- bottom, vessel and flue ash
- filter dust and bed sand

#### RESOURCE RECOVERY

We have vast experience and sufficient storage capacities for the sorting and treatment of:

- municipal waste (household and commercial)
- light shredder residue
- material/recyclables mixtures

#### DISPOSAL OF REMEDIATION MEASURES

We reliably and safely dispose of your residues from the dismantling of industrial plants, land recycling, earth, asbestos and fire damage refurbishment!

At the Ihlenberg landfill site the following technical facilities are provided for as IAG's disposal solutions:

- a landfill site for non-hazardous and hazardous waste of landfill class III, e.g. soils, sludge, asphalt, fire debris, building rubble and slag
- silos for the intake of dusty waste, e.g. flue and filter ash, and its dust-free unloading
- a residual waste treatment system for municipal, commercial and packaging waste
- a treatment facility for light shredder residual waste
- an interim storage facility for nonhazardous waste

The high-performance infrastructure at the Ihlenberg site enables a waste uptake of 4,000 tonnes per day and up to 1 million tonnes per year to be treated at our disposal facilities.

We prepare individual solutions for your specific disposal orders and, if required, provide on-site support.

Disposal is a matter of trust. We place great value on comprehensive control and transparency; that is our guiding principle. Our customers trust us with their waste and we dispose of it properly.



6 **Waste has its specific requirements with regard to the proper constructive embedding in the landfill body to guarantee a safe and environmentally friendly disposal.**

## The landfill

We do not simply dump waste.  
We construct a landfill body.

The total area of our operating site measures 165 hectares. Thereof 113 hectares are available for landfill. The Ihlenberg landfill site is one of the largest of its kind in Europe.

With a remaining capacity of around 7 million m<sup>3</sup> the disposal of waste at the Ihlenberg landfill is ensured for years to come. The structural shape of the Ihlenberg landfill corresponds with the standards of landfill class III; in other words, it fulfills the highest technical standards (sealing systems) for an over ground hazardous waste landfill site.

The waste is deposited in layers of around 4m in thickness. A modern, partially GPS-supported fleet consisting of bulldozers, wheel loaders, dumpers and other engineering machines guarantee optimal depositing at a high performance level. The safety of our employees receives a special focus from us. All equipment is provided with protective ventilation systems shielding the operators from external influences.

Currently not burdened disposal fields are covered by a specialised team of IAG-colleagues with temporary sealings. Heat-sealed plastic liners made from polyethylene protect the landfill body from permeating rainwater. This minimises the generation of leachate and the emission of landfill gas considerably.

When leaving the landfill site, all vehicles must pass through one of the three tyre cleansing facilities. Thus preventing a dispersion of waste through delivery vehicles and construction machines. Even for the company's own site cars, a special high-pressure cleansing facility has been installed to ensure clean vehicles.

As an additional service, we offer our partners the possibility to clean the trucks. Dump trucks, sliding-floorvehicles or container vehicles - regardless the type of vehicle, our washing plant offers resources-saving cleansing with rainwater.



7 *"I am a shift supervisor for landfill operations and I coordinate the work process for the proper disposal of waste. At the same time, I support operations by operating engineering machines such as diggers, bulldozers and wheel loaders."*

C. Mathews

# Residual waste treatment

Recyclables recovery is an important measure for the protection of resources.

## Sustainable disposal-safety

At our site, we operate a mechanical residual waste treatment facility with a capacity of around 120,000 tonnes per year for

- municipal waste
- commercial waste and
- material compounds

## Treatment process for residual waste

Sorting of waste mixtures into individual material flows:

1. Refuse derived fuels (RDF) for waste-to-energy
2. Ferrous and non-ferrous metals for recycling
3. Biogenic residue

As a result of this treatment process RDF's and separated recyclables are sustainably led back to the material flow and energy cycle. This is an essential aspect of an eco-friendly waste management – our contribution to the waste disposal in Northwestern Mecklenburg.

## Treatment facility for light shredder residue

IAG continually invests in modern plant technology. Another example of this is our treatment facility for shredder residue. During the process, substances of low calorific value and high calorific value are thoroughly separated. Materials such as ferrous and non-ferrous metals are separated for further recycling too.

## Fire-extinguishing systems

PREVENTION in fire safety pays off. Safety and continuity in plant operation are worth such measures. We protect our plant technology with a foam extinguishing system combined with infrared temperature monitoring. The extinguishing system provides constant monitoring and, in case of an emergency, the extinguishing process begins automatically, long before a fire actually breaks out.

As soon as the infrared monitoring system registers a significant temperature increase, the coordinates of this "hotspot" are sent to the extinguisher. The extinguishing pumps immediately start to pump a water-foam-mixture via ready-to-operate installed pipelines to the extinguisher. This device automatically aligns itself towards the detected hotspot and promptly begins to extinguish the hotspot reliably.

*"I am an employee at our residual waste treatment facility. I clear blockages in machine parts or on conveyor belts, supporting the failure-free plant operation."*

S. Rinal

**We guarantee disposal-safety.**



# Leachate treatment

We follow a clear path with our sustainable environmental technology.

## What is leachate?

Leachate is a substance that occurs inevitably with the landfilling of waste - mainly due to precipitation such as rain and snow that penetrates the landfill body, taking up water-soluble (hazardous) substances contained in the waste.

## Where does the leachate go?

At the Ihlenberg landfill leachate is collected at the base of the landfill body in drainage pipes and channelled via transportation pipes outside the landfill body towards the storage tanks. These tanks equipped with floating coverages buffer the leachate before it undergoes the treatment steps of separation, homogenisation and aeration.

After the fine particles are filtered, the leachate is treated in the reverse osmosis facility. The separation process results in a permeate (clean water) and a pumpable concentrate (residual hazardous substances). The permeate almost has the quality of distilled water making the treatment in maturation ponds necessary. After a retention time of several weeks the clean water, free of hazardous substances, passes a monitoring point before being discharged into the natural surface water body.

## What is reverse osmosis?

The principle of reverse osmosis is derived from nature; merely the direction of the osmotic flow is reversed and an additional pressure increase is triggered via membranes. Today, our leachate treatment facility is one of the most effective and largest in the whole of Europe. Our fully automatic, computer-controlled and pressure-staged reverse osmosis system works with up to 120bar and has a processing capacity of around 48 cubic meters per hour, currently enabling us to achieve a clean water recovery rate of 85% from the contaminated raw leachate.

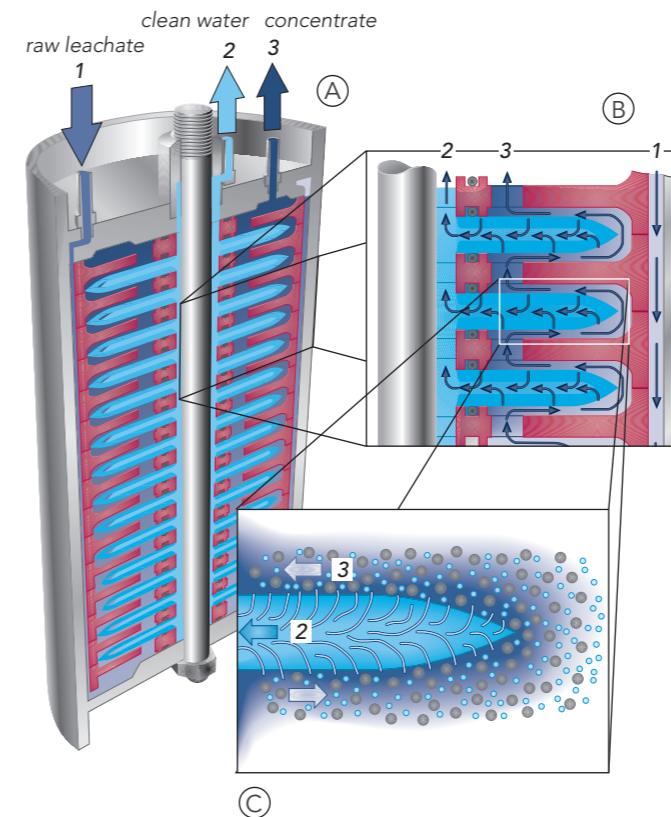


*"We are employees in the leachate treatment and energy production and supply department. The focus of our work includes controlling the wastewater and gas facilities at the Ihlenberg site."*

A. Bischof, T. Seibt



## How it works:



The raw leachate (1) is channelled into a separation process producing two mass flows - the clean water flow (permeate) (2) and the concentrate flow (3). The details are illustrated in the diagram:

- (A) This is the inside of a module installed at our leachate treatment facility. In each pressure container, 150 hydraulic discs with 149 semi-permeable (half-porous) membranes are stacked. A high-pressure pump presses the raw leachate (1) into the module.
- (B) The leachate flow path (1) indicated by the blue arrows overflows the membranes and clean water molecules (2) are pressed into the inner membrane cushions of each membrane. The detailed drawing (C) shows a schematic overview.
- (C) The water molecules are collected inside the membrane cushion and flow alongside the clean water flow (2). The molecules with the polluting load concentrate on the outside of the membrane cushions and are discharge as the concentrate flow (3) to a storage tank prior to the proper and safe disposal.

The clean water (2) flows into the maturation ponds.



## Controls

We work with the utmost care.  
This is approved in regular external and in-house controls.

At the IAG's company laboratory, samples from leachate and wastewater as well as waste for treatment and disposal are taken and analysed.

Our qualified expert staff applies modern environmental analytics technologies for the processing of the assignments.

The company laboratory serves as an internal service provider for all departments of IAG.

Confidential and responsible conduct and compliance to the requirements of the accredited quality management system are of utmost importance for the daily work of the laboratory team.

Our company laboratory has been accredited by the German accreditation institute DAkkS in accordance with DIN EN ISO/IEC 17025 continuously since 2003.

IAG repeatedly and successfully underlies requalification audits as a specialist disposal company regarding the waste management activities STORAGE, TREATMENT, RECYCLING, DISPOSAL, DEALING and BROKERING. We regularly prove that we fulfill the requirements of our specialist disposal company regulations to the fullest extent.

At the touchstone are the company organisation, personal equipment, management of the operations log, operational insurance cover, reliability, specialist and expert knowledge of the company owners, as well as all those responsible in operations and other such personnel. Furthermore, we constantly account for the compliance of our work with legislative regulations concerning our waste disposal activities.



Renewed certification as a specialised waste disposal company in accordance with §§ 56 and 57 KrWG (waste management act) is evidence of the high quality service level of IAG mbH.

## Monitoring programme at the Ihlenberg site

We have set our quality and safety standards high. The environmentally orientated design of our operating processes and procedures in our modern company requires a great deal of self-responsibility. Our environmental protection concept is process-orientated and exceeds selective tasks by far. It comprises objectives and measures for the protection, safeguarding and improvement of the environment in all business fields at our operating site.

### Biomonitoring

Biomonitoring serves as an integral component of our corporate health prevention concept for the early recognition of possible contamination with hazardous substances in the respective work areas. Our employees are protected by technical, organisational and personal protection measures from the ingestion of hazardous substances. A core focus herein is the prevention and reduction of dust emissions and the personal protection against dust intake.

### Surface water controls

Comprehensive temporary sealing measures on inoperative landfill sections prevent the infiltration of rain and snow into the landfill body. The precipitation water runs off the temporary sealing liners and is collected in storm water tanks. These tanks are equipped with skimmers and a sedimentation area before the storm water is discharged into the natural surface water body passing a continuous automatic monitoring.

## Groundwater monitoring

The groundwater monitoring programme at the Ihlenberg landfill started in 1981 and has since then been continuously operated, comprising an extensive measuring programme with regular detailed assessments of the results with the supervisory authority.

Visit our website and find out more:



[www.ihlenberg.de](http://www.ihlenberg.de)

*"I work in the waste reception department as a marshaller for the delivery vehicles. My tasks include, for instance, taking samples from waste deliveries."*

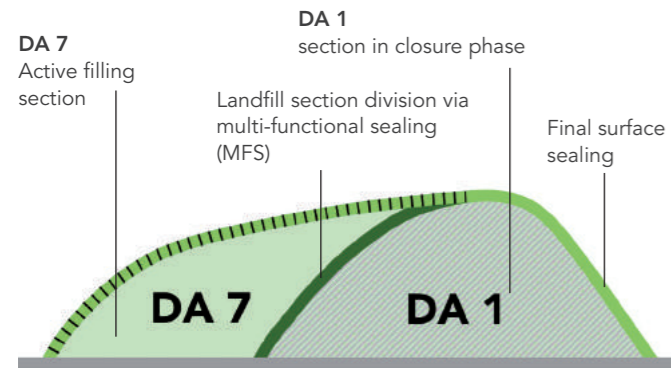
R. Nofftze



# Sealing and covering systems

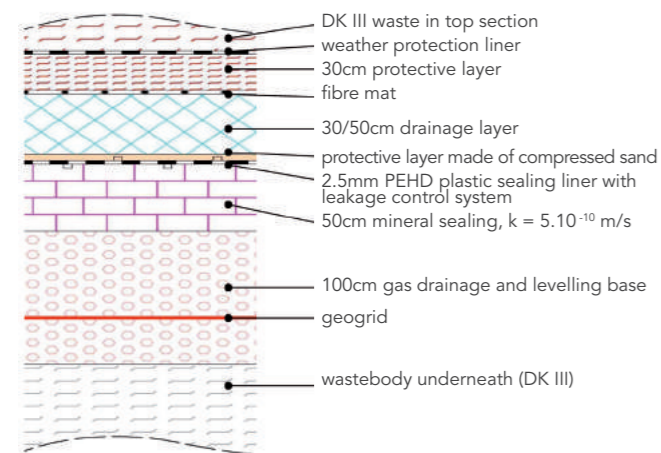
At highest technological level.

## MFS - multi-functional sealing



The construction of the multi-functional sealing represents a technologically sophisticated structure. It symbolizes the beginning of the aftercare phase of the so-called "old section" (DA1). The MFS encompasses two functions. One purpose is the final surface sealing for the landfill section underneath. The second purpose is the base sealing for the landfill section above the MFS and securing the remaining capacity of the active filling section for DKIII-waste with the state of the art technology.

## MFA layer profile

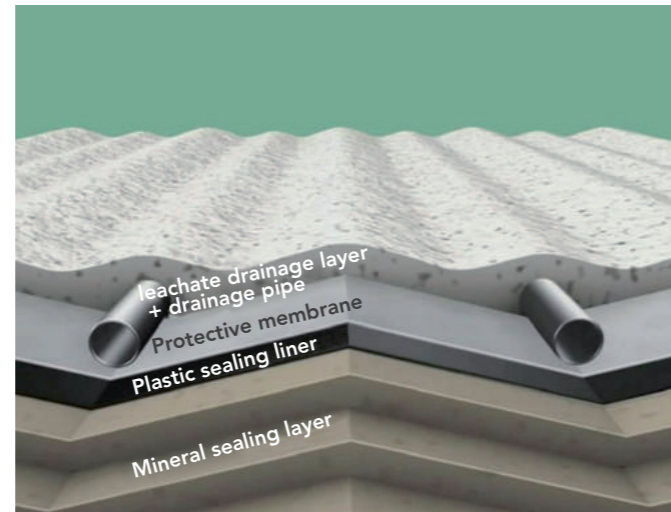


## Base sealing

Before the first waste can be disposed at a landfill, the landfill base must be constructed in accordance with statutory regulations.

Each new landfill section is initially adapted to a pre-determined level with heavy engineering equipment. The geological barriers placed between the natural underground and the landfill sealing system must be at least 5m thick according to landfill regulations.

The following mineral sealing layer is fitted and compressed with bulldozers, padfoot rollers and smooth finishing rollers. After completion, the mineral sealing layer has a thickness of 0.5 metres.



Due to the drainage layer above the sealing layer, the water lacks a sufficient pressure to penetrate the sealing material. However, as stipulated in the landfill regulations, the mineral sealing is supplemented with a plastic polyethylene sealing liner with a thickness of 2.5mm. This liner is heat-sealed with special mobile heat sealing devices. The use of these sealing liners for more than 20 years now, has shown that these sealing systems are highly reliable.



## Combination sealing

As a further measure for environmental protection, we apply the principle of combination sealing at our site Ihlenberg. We have illustrated the different landfill components in the diagram to the right. As well as the base seal, the surface sealing and reclamation are also the focus of our activities.

### Surface layer and reclamation - option

1. 100cm culturable earth
2. 30cm drainage layer for surface water
3. HDPE sealing liners (2.5mm) with leakage control system
4. 50cm mineral sealing
5. 50cm gas drainage and levelling base with gas collection pipes

### Gas collection station

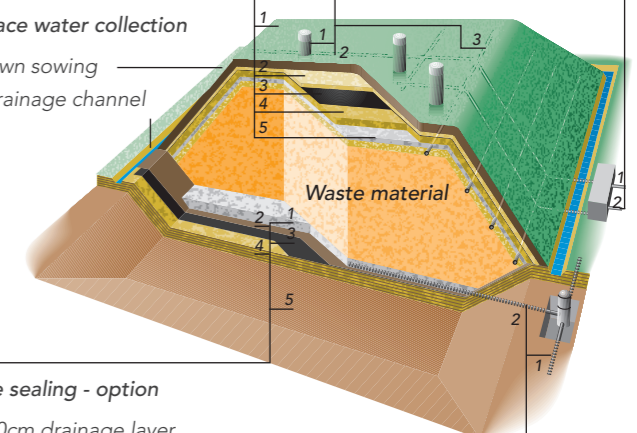
1. high calorific gas
2. low calorific gas

### Gas collection system

1. gas collection element
2. gas collection pipelines
3. gas drainage pipelines

### Surface water collection

1. lawn sowing
2. drainage channel



### Base sealing - option

1. 50cm drainage layer
2. geotextile membrane including mineral protection layer
3. HDPE sealing liner (2.5mm)
4. 50cm mineral sealing
5. natural geological barrier (> 5m)

### Leachate drainage

1. leachate inspection shaft
2. leachate collection pipe, HDPE drainage pipe DN 300 (perforated drainage pipe)

"I am project manager for the sealing measures of the landfill body at the base and surface. I am also in charge of the reclamation and aftercare measures."

C. Kobel







### IAG - Ihlenberger Abfallentsorgungsgesellschaft mbH

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### Chairperson of the Board of Directors:

Hans-Thomas Sönnichsen

### Company management:



Dipl.-Ing. Norbert Jacobsen  
Technical Business Manager



Dipl.-Ök. Beate Ibiß  
Commercial Business Manager

### Opening hours

Mon-Fri: 6am-6pm  
Beyond these hours upon arrangement.

### How to reach IAG

Thank you for your interest in our work. You are welcome to arrange a visit to our operational site with all its facilities – Please do not hesitate to contact us.

Our company is conveniently situated in the northwest of Mecklenburg, around 8km to the east of Lübeck, directly off the B104 federal highway just a few minutes away from the A20 federal autobahn ("Schönberg" exit).

[www.ihlenberg.de](http://www.ihlenberg.de)



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