Supply Center Bergkamen

Site presentation

26th June
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Supply Center Bergkamen
2 other companies on site: Lanxess (red) and Huntsman (yellow)

approx. 1.200 m
approx. 1.700 m
Some Indicators

// Portfolio
// 49 APIs (30 Steroid hormones, 11 Corticoides, 8 Therapeutics)
// approx. 200 Synthesis steps

// Per year
// > 1.400 t contrast media
// approx. 80 t hormones
// > 9.000 t intermediates

// Employees
// > 1.600 + 160 trainees

// Costs
// approx. 255 Mio. Euro/year
Chemical-Microbiological* Steroid-Synthesis

* Reason for manufacturing authorization

Biotransformation is an important part of steroid synthesis

- Neroline – Levonorgestrel: 12 steps
- Diosgenine – Difluocortolone valerate: 16 steps
- Sterine – Drospirenone: 16 steps

\(=\) microbiological step  \(=\) chemical step  \(=\) micronization process (DSFP Berlin)

Steroid Synthesis Process:

1. Neroline to Levonorgestrel
2. Diosgenine to Difluocortolone valerate
3. Sterine to Drospirenone

Chemical step
Microbiological step
Microinization process

Steroids:
- Neroline
- Diosgenine
- Sterine
- Levonorgestrel
- Difluocortolone valerate
- Drospirenone
### Supply Center Bergkamen
Hormones (contraception / hormone replacement therapy / dermatology)

<table>
<thead>
<tr>
<th>Levonorgestrel</th>
<th>Gestoden</th>
<th>Dienogest</th>
<th>Drospirenone</th>
<th>Cyproteronacetate</th>
<th>Dermatologie</th>
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</thead>
<tbody>
<tr>
<td>+ Ethinyl estradiol</td>
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<tr>
<td>Mirena®</td>
<td>Meliane®</td>
<td>Valette®</td>
<td>Yasmin®-Familie</td>
<td>Diane®</td>
<td>Advantan®</td>
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<tr>
<td>Microgynon®</td>
<td>Femovan®</td>
<td>Climen®</td>
<td>Angeliq®</td>
<td>Androcur Thera®</td>
<td>Nerisona®</td>
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<td>Triquilar®</td>
<td>Mirelle®</td>
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<td>Climara Duo®</td>
<td>Avaden®</td>
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<td>Miranova®</td>
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<td>Progynova®</td>
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<td>Cyclo-Progynova®</td>
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<td>Neogynon®</td>
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<td>Microlut®</td>
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<td>Femilar®</td>
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<td>Nuvelle®</td>
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<td>Sequilar®</td>
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</tbody>
</table>
## Supply Center Bergkamen

### Contrast media

<table>
<thead>
<tr>
<th>Iopromide</th>
<th>Gadobutrol</th>
<th>Gadolinium-EOB-DTPA</th>
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</thead>
<tbody>
<tr>
<td>Ultravist®</td>
<td>Gadovist®</td>
<td>Primovist®</td>
</tr>
<tr>
<td>// X-Ray</td>
<td>// MRT</td>
<td>// MRT</td>
</tr>
</tbody>
</table>

![Contrast media images](image1)
Chemical/Microbiological production in 5 plants
Each synthesis step: Reaction vessel (fermenter), centrifuge, dryer

Some reactions:
- Bromination
- Fluoration
- Grignard
- Simmons-Smith
- Oxidation as Oppenauer
- Reductions with
  - Hydrogen,
  - Lithium (Birch),
  - Catalysed by Nickel
Infrastructure facilities
Plants and topics

- Fire brigade
- Site security
- Power plant with steam and electricity supply
- Waste incineration
- Tank farms, distillation plant, process water treatment
- Process control rooms and process control technique including prevention of cyber attacks

Waste water treatment with membrane filter technique

special current topic: Pharmaceuticals in the environment
Examples of rules and instruments

- Chemical weapon
- Seveso III (Hazardous substances)
- Dangerous goods and substances
- Different environmental acts
- External rules
- Some instruments
- Hazard and Operability studies
- Job safety analysis
- Enterprise risk management

- Everybody
- Neighborhood
- Employees
- Water, soil, air

In total there are around 1700 HSE rules with more than 8000 duties.

Around 10 HSE-Audits every year.

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Everybody

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Around 10 HSE-Audits every year.
Safety first

Lost time incidents SC Bergkamen

It is you who matters

- Our claim: we want to steadily get better
- Safety is Priority 1 Employee & Patient
- Never stop thinking
- Challenge ongoing routines
- Establish “lighthouses” & talk about it

* Beobachten, Informieren, Motivieren, Kontrollieren, Auswerten
Motivation and experience in training

// Our company’s mission is “Science for a better life”

// This includes corporate social responsibility, for example sharing the organizations knowledge especially in occupational safety, environmental aspects, plant and process safety and security

// The site Bergkamen is the biggest API site at Bayer, so we have to handle a lot of details/challenges on the topics mentioned above. Therefore we had to built up expertise in various topics.

// Consequently, we accepted to train Austin and answered most of his questions. We also got his view points on various issues.

// Interestingly, he seemed more amazed by the Training we offer at Bayer for chemical technicians and others.
Vielen Dank!

Thanks!

26th June