



**German Chemical Society**  
**Gesellschaft Deutscher Chemiker**

GDCh-Advisory Committee  
on Existing Chemicals of  
Environmental Relevance (BUA)

**BUA Reports 76 - 79**

**Urea**

BUA Report 76  
(October 1991)

**Isobutylidene diurea**

BUA Report 77  
(August 1991)

**Potassium amyloxanthate**

BUA Report 78  
(December 1991)

**Potassium isobutylxanthate**

BUA Report 79  
(December 1991)



S. Hirzel

Wissenschaftliche Verlagsgesellschaft 1995

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Beratergremium für  
Umweltrelevante Altstoffe (BUA)



S. Hirzel

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## Foreword

The German Chemicals Act (Chemikaliengesetz - ChemG) of 1980 stipulates that certain existing chemicals must be reported to the competent authority, if they exhibit properties which indicate that they may be hazardous, either alone or in combination with other substances.

In the summer of 1982, an Advisory Committee on Existing Chemicals of Environmental Relevance (BUA) was set up by the German Chemical Society (Gesellschaft Deutscher Chemiker - GDCh). It brings together representatives from the scientific community, the chemical industry and the governmental authorities. This Advisory Committee is responsible for elaborating appropriate solutions for substances of relevance for health and the environment on the basis of voluntary measures. It selects and examines existing chemicals from the aforementioned angles. The testing and evaluation are based on scientific criteria alone.

It was, therefore, necessary to develop priority setting procedures. In a first phase reports were only prepared for priority chemicals. Within the framework of a first priority setting procedure, chemicals were compiled from several priority lists and 135 chemicals were selected for detailed substance reports.

In a second priority setting procedure the survey of the German Chemical Industry Association (VCI) on all substances with a production volume of more than 10 tons per year was used as a starting list. Since this survey covered 4,600 chemicals, BUA decided to process the corresponding list in several stages. The first stage included approx. 1,050 substances with a production volume of more than 1,000 tons per year.

Detailed reports are drawn up on chemicals suspected of having a hazard potential and abridged reports on those presenting only a minor hazard potential, according to the current state of knowledge.

The detailed BUA reports take in both the published literature and data from industry. If data for the evaluation of the chemicals are not available, additional studies are recommended and the results are published as updates to the reports. The reports serve as a basis for the instigation of administrative measures, when there are indications of risks to health or the environment.

Tübingen, May 1993

Ernst Bayer  
Chairman of the Advisory Committee  
on Existing Chemicals  
of Environmental Relevance

# **Urea**

BUA Report 76 (October 1991)

edited by the GDCh-Advisory  
Committee on Existing Chemicals  
of Environmental Relevance

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## BUA Report on Urea

### 8 Summary and conclusions

Urea is a ubiquitous metabolic end product of many terrestrial vertebrates, including man. Biogenic emissions for the area covered by former West Germany are roughly estimated to be about 2 million tonnes per annum.

From the industrial production of urea by the BASF AG, the Norsk Hydro Agrar AG and the Stickstoffwerke AG, about 1,300 t/a are emitted into the atmosphere, while about 400 t/a are emitted in effluent (1989). In 1990, emissions from the processing of urea at BASF amounted to 48 t (in effluent) and to less than 10 kg (in the atmosphere). Emission data for other processors of urea are not available.

About 275,000 tonnes of urea per annum are used as fertilizer in agriculture in former West German (1990), being applied to the soil or used in aqueous solution as a leaf dressing.

In the Zahn-Wellens test, urea has been shown to be inherently biodegradable, while in laboratory tests with river water it was degraded completely. For most aquatic test organisms  $LC_{50}$  values range from 6 to more than 10 mg/l. For cyanobacteria and protozoa, on the other hand, toxic threshold concentrations of between 29 and 2,700 mg/l have been found.

Urea has been placed in group III (substances which according to available data present a low hazard potential for the general population and for the environment). The present evaluation confirms this classification and shows that wide-spread exposure of man and environment from industrially produced and naturally occurring urea is possible. The ecotoxicological and toxicological data provide no indication of urea presenting a hazard.

# **Isobutylidene diurea**

BUA Report 77 (August 1991)

edited by the GDCh-Advisory  
Committee on Existing Chemicals  
of Environmental Relevance

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## **BUA Report on Isobutylidene Diurea**

### **8 Summary and conclusions**

From its use in fertilizers, all IBDU is introduced directly into the environment. Compared to this, emissions of max. 5 t/a from production and processing (no more than 0.15 % of the total amount entering the environment), even disregarding its biological degradation during wastewater treatment procedures, are of no significance. Studies of the toxicity of Isodur® towards aquatic organisms produced EC<sub>50</sub> values in the range of 500 to over 1,000 mg/l (nominal concentrations).

IBDU has been placed in group III (substances which according to available data present a low hazard potential for the general population and for the environment). The present evaluation confirms this classification and shows that wide-spread exposure of man and environment is possible. The ecotoxicological and toxicological data, however, provide no indication of IBDU presenting a possible hazard potential.

# **Potassium Amylxanthate**

BUA Report 78 (December 1991)

edited by the GDCh-Advisory  
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## BUA Report on Potassium Amylxanthate

### 7. Summary

Potassium amylxanthate is used solely as floatation agent in the processing of sulphidic ores.

In the Federal Republic of Germany about 120 t/a are used for this purpose, most of which (> 98 %) remains adhered to the ore and is burnt during further processing. For economic reasons, as from March 1992 potassium amylxanthate will no longer be used in this country (101).

Based on how it is used, total emissions of potassium amylxanthate into the hydrosphere in the Federal Republic of Germany can be calculated to amount to less than 365 kg/a.

An exposure risk for humans exists only at the workplace, where contact is avoided as far as possible by the use of air extractors and protective clothing (rubber gloves).

In respect to the ecotoxicology of potassium amylxanthate, the lowest known acute toxicity concentrations are between 0.1 and 1.0 mg/l (96-hr LC<sub>50</sub> for *Daphnia magna*). In a 28-day test of reproduction toxicity with rainbow trout, the threshold concentration for causing impairment of egg development in the ovaries and liver necrosis was 0.07 mg/l. Potassium amylxanthate is inherently biodegradable.

Potassium amylxanthate has been placed in group III (substances which according to available data present a low hazard potential for the general population and for the environment). The present evaluation confirms this. The substance is not produced and no longer used in the Federal Republic of Germany. Thus, its ecotoxicological potential is not realized and studies of further toxic effects are not a priority.

# **Potassium Isobutylxanthate**

BUA Report 79 (December 1991)

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## **BUA Report on Potassium Isobutylxanthate**

### **7. Summary**

Potassium isobutylxanthate is used solely as a floatation agent in the processing of sulphidic ores. Since 1989 potassium isobutylxanthate is no longer used in the Federal Republic of Germany, the only user having stopped using it for economic reasons.

An exposure risk for humans exists only at the workplace. No relevant data is available, but exposure is probably restricted to dermal contact when the floatation baths are prepared.

In respect to the ecotoxicology of potassium isobutylxanthate, the lowest known level of acute toxicity is 0.325 mg/l (72-hr EC<sub>50</sub> for a green alga in growth inhibition test with sodium isobutylxanthate). Potassium isobutylxanthate is inherently biodegradable.

Potassium isobutylxanthate has been placed in group III (substances which according to available data present a low hazard potential for the general population and for the environment). The present evaluation confirms this. The substance is not produced and no longer used in the Federal Republic of Germany. Thus, its ecotoxicological potential is not realized and studies of further toxic effects are not a priority.