



Global goods transport  
**Container fumigation –  
a consumer protection topic?**

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**Almost all of the packaged goods conveyed in global trade are transported in containers. A large number of these are fumigated in the exporting country prior to shipment. Within the scope of a research project, the BfR examined the release of fumigants from foods and consumer products.**

To prevent the introduction of pests, especially insects from wood, containers are fumigated prior to transport. Fumigation is also carried out to protect the transported goods against infestation with harmful organisms and mould. Regulations to protect humans where fumigation is concerned have been in place in Germany for quite some time.

### **International occupational safety has to be improved**

Although warning signs are being demanded for the recognition of fumigated containers in the regulations on the sea transport of hazardous goods, only a few of the fumigated sea containers transported to Germany bear markings of this kind. This has resulted in repeated cases of poisoning in Germany in the past when unmarked, fumigated containers were opened. The BfR has been advocating an improvement in the global regulations on the transport of dangerous freight for years. The institute proposed, for instance, that fumigation warning signs in sea transport should be made waterproof. As of this year, this is now internationally mandatory required.

### **Fumigants in consumer products**

The goods transported in containers may absorb some of the fumigant and – sometimes with a time delay – release it again after fumigation has ended (desorption). In order to enable an estimation of health risks for consumers, a number of open questions still have to be answered with regard to the quantities of fumigant released and the precise chronological order of the release. For this reason, it must be taken into consideration whether, due to ever shorter delivery and storage times, substances are degassing to an increasing extent at home instead of in the warehouse, and whether this poses a health risk. It is also being investigated at the moment whether fumigation alters the transported goods and whether changes of this kind conceal health risks. Where possible fumigant residues in foods are

concerned, information is currently available on active substances which are authorised as a plant protection product or biocide for the protection of stored goods, such as phosphine or sulphur fluoride.

### **Experimental studies simulate release**

In order to better understand the desorption behaviour of fumigants from various consumer products and foods, and to generate sound data for a risk assessment, the BfR initiated research projects with the Central Institute for Occupational Health and Julius Kühn Institute. In these projects, the release of fumigants from foods such as apples, sunflower seeds and wine grapes, as well as various consumer products, such as socks, packing paper and shoes, is determined. It is also examined whether fumigation causes a chemical change in the test objects.

### **Released gas quantities within legal limits**

First results show that, as expected, the release speed and released quantity of gas depend on the properties of the fumigated freight and the fumigant used. The release of fumigants with a higher boiling point is slower compared to those with a low boiling point. The released gas quantities from the foods examined were found to fall below the maximum residue levels determined by the European Food Safety Authority (EFSA) – before expiry of the legal waiting period, which is the time between the use of the fumigant and the marketability of the produce. Likewise, the reference values for chronic exposure to the examined fumigants from consumer products which were used for the evaluation were no longer exceeded in most cases after a few days.

Although health impairments for consumers seem unlikely after evaluation of the currently available data, there is a need for further research and testing so that possible health risks can be recognised and avoided. ■

**Fumigants protect goods from pests during transport, but residues of these substances remain detectable in the goods.**