

# Focus on IFA's work

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## Olfactory disorders caused by substances at work

### Problem

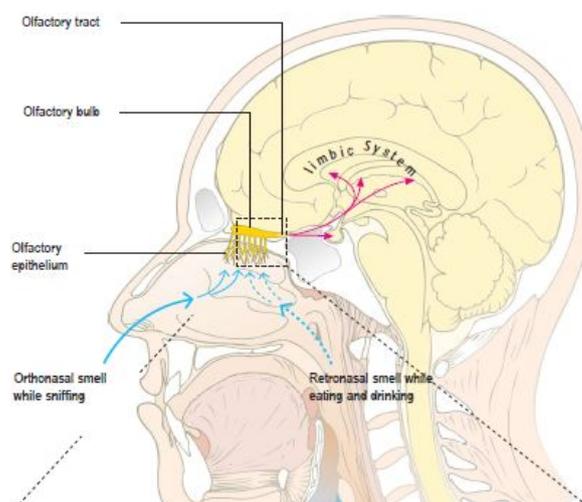
The perception of odours is one of the body's important functions in terms of hazard detection and protection. Many professional groups need an intact sense of smell for the performance of their duties.

Numerous substances that irritate the mucous membrane but also damage the venous system are suspected of impairing it. However, published lists of substances associated with olfactory damage are often based on clinical reports or individual case observations after acute high exposures and rarely on broad-based studies.

The proportion of work-related olfactory disorders has not yet been clarified. Data for the proportion of impairment of olfactory function induced by chemicals and medication vary between 0.5 and 5% of all cases.

### Activities

In an extensive evaluation of the scientific literature, the current state of knowledge on the development of olfactory disorders and their significance was reviewed. The focus was on larger epidemiological studies on substances at work (agents) that cause olfactory disorders. In addition, it was examined whether the results of animal experiments were able to confirm the findings on humans and whether they provide indications of possible mechanisms of action.



From the nose straight to the brain: olfaction  
Image: Courtesy of the Pharmazeutische Zeitung  
([www.pharmazeutische-zeitung.de](http://www.pharmazeutische-zeitung.de), Krone und Hummel  
2008)

### Results and Application

The results were published in the form of several journal articles and lectures.

These not only presented the causes and mechanisms known so far to affect the sense of smell, but also summarised current diagnostic and therapeutic methods. The emphasis was on the evaluation of larger epidemiological studies.

These showed that cadmium, nickel and chromium as well as formaldehyde can impair human olfaction under workplace conditions. The following conclusions can be drawn for practice:

- The isolated indications of olfactory problems that occur in the event of chronic exposure even to comparatively low workplace concentrations of the above-mentioned substances should be investigated.
- It has been proven that many people are unaware of the impairment of their sense of smell. Regular monitoring of the olfactory capacity of employees at certain workplaces is therefore advised. An olfactory test ensures that workers with potential contact with olfactorily detectable hazardous substances are capable of detecting such hazards by smell.
- Workers with severe olfactory disorders must be informed that their awareness of olfactorily detectable hazardous substances is limited or non-existent. In order to prevent any risks, appropriate measures must be taken at the workplace and in private life.
- An objective olfactory test can also aid the early detection of pathological changes in the nervous system. Olfactory disorders are of great importance as early symptoms for the diagnosis of diseases such as idiopathic Parkinson's syndrome (IPS) and Alzheimer dementia.

### Area of Application

Persons involved in risk assessment and the evaluation of air concentrations of chemical agents: supervisors, occupational doctors, etc.

### Additional Information

- Werner, S.; Nies, E.: Olfactory dysfunction revisited: a reappraisal of work-related olfactory dysfunction caused by chemicals. *J. Occup. Med. Toxicol.* (2018) No. 6  
<https://occup-med.biomedcentral.com/articles/10.1186/s12995-018-0209-6>
- Werner, S.; Nies, E.: Arbeitsbedingte Riechstörungen durch chemische Noxen – Allgemeine Betrachtungen. *Umweltmed. – Hygiene – Arbeitsmed.* 21 (2016) No. 1, pp. 1-12
- Werner, S.; Nies, E.; Möller, A.: Arbeitsbedingte Riechstörungen durch chemische Noxen – Stoffspezifische Erkenntnisse. *Umweltmed. – Hygiene – Arbeitsmed.* 21 (2016) No. 2, pp. 63-79

### Expert Assistance

IFA Division 1: Information technology, risk management

### Literature Requests

IFA Central Division