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 **IPA**
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Seeking companies and study participants!



Employees' health and safety when working with diisocyanate-containing materials

What is the rationale for the study?

- Diisocyanates are important substances in the manufacturing and application of polyurethane (PUR)-containing materials. Diisocyanates cannot easily be replaced
- Diisocyanates can cause occupationally induced obstructive respiratory and pulmonary diseases
- A REACH restriction regulation is forthcoming for diisocyanates, which will include compulsory and verifiable protective measures and training for employees

What is the aim of the study?

- To record the number of work-related respiratory and lung diseases caused by diisocyanates
- To determine the amounts of diisocyanates which are taken up by employees
- To describe the relationship between exposure and respiratory and lung diseases
- To systematically check the effectiveness (i.e., reduction of exposure and diseases) of protective measures which are specified in the REACH restriction proposal

How will the results be used?

- To develop and implement **appropriate and feasible protective measures** to reduce exposures
- To contribute to **hazards and risk assessment** of occupational exposures to diisocyanates **based on scientific evidence**



PUR block foam production

For the company

What are the **benefits** of participating?

- To further **improve current preventive measures**, e.g., within an already established health management program
- To **contribute to a healthy workforce** by minimizing work-related diseases and reducing sickness-related absences of employees
- To be prepared for future industrial safety measures after the initiation of the REACH restriction

Which companies or special job profiles are we looking for?

- Companies working with polyurethanes/diisocyanates [methylenediphenyl diisocyanate (MDI), hexamethylene diisocyanate (HDI), toluene diisocyanate (TDI) or isophorone diisocyanate (IPDI)]
- Activities such as producing and applying polyurethane/diisocyanate-based materials including mixing, pelleting, glueing, injecting, insulating, hot-cutting, foaming, coating or spraying



PUR casting production

Which prerequisites are desirable for study participation?

- Sufficient number of employees that have one or more of the aforementioned job profiles
- Suitable study rooms for carrying out medical examinations on-site
- Willingness to participate continuously for the duration of the main study (approx. 2020 to 2025)

For the employees

What are the **benefits** of participating?

- To **improve occupational safety and health**
- To get a **free annual health check-up** throughout the period of the main study with a special focus on respiratory diseases
- To **annually obtain individual information on exposures** to diisocyanates
- To get **work-related advice on health protective measures**

Who can participate?

- Employees aged 18 to 58 with exposures to MDI, HDI, TDI and/or IPDI

What is your contribution?

- To volunteer as a study participant after receiving detailed information on the study
- To annually complete a questionnaire on work-related activities and on your health status
- To annually provide blood and urine samples
- To actively participate in the annual health check-ups



Mobile measurement of pulmonary function

Which investigations are carried out?

Workplace air

- Air samples are analyzed to determine diisocyanate exposure at the workplace

Blood

- A complete blood count is carried out and antibodies are determined to detect an allergic reaction against common allergens
- Selected inflammation markers are measured
- Reaction products of diisocyanates and diisocyanate-specific antibodies are analyzed

Urine

- Metabolites of diisocyanates are determined

Skin

- Potential skin exposures to diisocyanates are assessed

Lung function / Exhaled air

- Pulmonary functions are measured
- Nitric oxide in exhaled air, an inflammatory marker of the airways, is analyzed

What happens if we suspect that you might suffer from a respiratory disease?

- You will get specific advice and medical care by the study physician
- Additional diagnostic measures that go beyond the regular study measurements will be carried out, e.g., testing for bronchial hypersensitivity and analyzing additional inflammatory markers in sputum (phlegm from the deeper airways)