

for the referent group ($p=0.015$ and 0.003). For CPITN and LA scores, the adjusted odds ratio for acid mist exposed group were 2.80 (95% CI: 1.00 to 7.88; $p=0.05$) and 2.85 (95% CI: 1.54 to 5.28; $p=0.001$). However, DMFT scores and dental erosion were not associated with the exposure to acid mist, even after control for age, duration of work, smoking habits, drinking habits and betel nut chewing habits.

Discussion The findings suggest that the workers exposed to acid mist from electroplating would increase the risk of periodontal disease. Further work environmental design or equipment reform are still needed to protect from acid mist exposure.

532 SHEDDING A LIGHT ON GREY LITERATURE SEARCHES FOR OCCUPATIONAL HEALTH TOPICS: A BELGIAN CASE STUDY ON CHEMICALS EXPOSURE

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Introduction For occupational health topics with hardly any published white literature available, grey literature can be a generous information source. This abstract describes the search and use of grey literature in preparation of the PROBE (Hazardous chemical Products Register for Occupational use in Belgium) study, aiming to map both occupational exposure to chemicals in Belgian workers and the need for knowledge about such exposure.

Methods A cascade of methods was applied. First, relevant associations, organisations, agencies and bodies were identified through interviews with field experts and general internet search engines. Then, specific domains within Google Advanced Search were applied to geographically limit the results to Europe and Belgium. As quality filters, the domain limits org, edu and gov were applied. A second approach consisted in specific grey literature gateways. Finally, references in retrieved documents were explored for additional information sources.

Results This multifaceted approach generated a comprehensive overview of evidence based data. The compiled information can be categorised as databases with exposure data and chemical risk assessments, data from similar research in other countries, methodological insights in chemicals selection and exposure surveillance techniques, interim reports of ongoing research, reports, white papers, and legislation.

The pathway of grey literature databases was abandoned, as its literature was outdated.

The retrieved information provided us with the necessary acumen in the selection of relevant chemicals and appropriate assessment strategies to strengthen the proposed study protocol.

Discussion A grey literature search is a challenging and lengthy process as the information is dispersed, hard to access and fragmented. The standard review methods for white literature do not apply to grey literature searches. The complex

architecture of grey literature requires an innovative, creative and iterative approach. Nevertheless we succeeded in tapping valuable information from this source. Further initiative is needed to improve grey information availability and retrieval.

568 AN ASSESSMENT OF PERCEPTIONS AND KNOWLEDGE OF CHEMICAL HAZARDS IN THE MOTOR SPRAY PAINTING INDUSTRY IN BULAWAYO

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Introduction The motor vehicle repair industry with particular focus on spray painting in Bulawayo has grown especially after dollarization in 2009, owing to the increasing number of vehicles in the city. The industry is made up of both the formal and informal repairers with the informal sector registering the largest growth compared to their formal counterparts due to the low prices they charge. This industry has not been spared either from the occupational safety and health scourge that continues to haunt the Zimbabwean economy.

Methods A descriptive and cross sectional study of companies in both the formal and informal sector was carried out. Twenty five factories were visited and twenty five spray painters were interviewed. The research combined the use of observations guided by a checklist and a questionnaire administered to employees in this sector to collect data.

Result 96% of the employees interviewed are in the 21–40 age groups, were predominantly male, with very few females found in the workshops. There is generally a high exposure to chemicals which the employees are fully aware of but PPE/C use was low during the spraying process. The spraying process in the informal sector is done in the open while in the formal sector, booths maybe available ventilation and chemical exposure design are a cause of concern. The majority of workers have general awareness on the manifestation of health effects stemming from their work but do not have an understanding of how these could affect their health.

Conclusion Lack of chemical safety education in these organisations is a major factor contributing to the continued exposure to chemicals in the workplace. Mandatory training for initial certification to operate and work a spray painting workshop and refresher training after a certain period of time for example every two years by the government is therefore recommended.

679 SEIRICH: A TOOL FOR THE ASSESSMENT OF CHEMICALS IN OCCUPATIONAL ENVIRONMENTS

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Uses of Chemicals placed on the European market within the framework of the REACH regulation require in the end a field assessment according to the provisions of the French Labour Code. Numerous methods exist for assessing chemical risks in the work environment in France, taking into account risks to health, fire, explosion and environment. These

methods should be harmonised in order to ensure consistency among prevention actions. For this purpose, INRS has developed a software named Seirich.

The methodology deployed in Seirich is part of a national agreement on prevention of chemical risk, and involves numerous partners, including the French Ministry of Labour, the Occupational Risk Directorate of Social Security and several trade organisations. This tool includes the classification and labelling of substances and mixtures according to the CLP regulation (EU regulation EC 1272/2008). The methodology includes several steps implemented as functionalities: inventorying of products and emitted substances; ranking of products and emitted substances according to their risk level; chemical risk assessment adapted to the user's degree of expertise; technical and legal advice adapted to the context; follow-up for prevention actions.

The description of the methodology and the Seirich software are available for download free of charge, via the www.seirich.fr website (in French). Since June 1st 2015, Seirich has been downloaded by more than 15.000 companies in France and abroad and several training sessions have been organised for helping companies in chemical risk assessment with Seirich.

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PHYSICAL AND PSYCHOLOGICAL HEALTH COMPLAINTS AFTER A MALODOROUS CHEMICAL ACCIDENT: A LONGITUDINAL STUDY

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Introduction In 2007, an oil tank in an industrial area in Norway exploded and caused a prolonged malodorous pollution. Previous studies have shown that acute physical and psychological health complaints are prevalent in populations recently affected by industrial accidents. However, follow-up studies of human health effects after such accidents are limited, and knowledge about long-term health effects among workers exposed to malodorous emissions following a chemical accident is scarce. The aim of the study was to assess whether subjective health complaints among employees in the industrial area and clean-up workers declined over a four-year period after an oil tank explosion, a period that included removal of the malodorous pollution.

Methods A longitudinal survey from 2008 (1 ½ years after the explosion) to 2012 (5 ½ years after the explosion) was performed using the Subjective Health Complaints Inventory, a validated questionnaire. Data were analysed using a linear mixed effects model.

Results In 2008, exposed workers (n=147) had significantly more health complaints such as headache, tiredness, sleep problems, dizziness and depression, compared to unexposed controls living far away from the explosion site (n=137). In 2012, there was a reduction of subjective health complaints among the exposed workers, but they still had significantly more subjective neurological symptoms (p<0.01) than controls, adjusted for gender, age, smoking habits, educational level and proximity to the explosion.

Discussion It is likely that the overall decrease of subjective health complaints among exposed workers could be due to decreased exposure to malodorous pollutants or time passed since explosion. However, the persistent subjective neurological complaints might be mediated by perceived pollution and health risk perception. Worry might have caused a chronic effect, manifested by a dysfunctional and persistent neuropsychological response. A possible implication is that quick clean-up of malodorous chemical spills is important to avoid persistent health effects.

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DEVELOPMENT AND IMPLEMENTATION OF THE COMPREHENSIVE SCHEME FOR EXPOSURE ASSESSMENT OF CHEMICALS IN INDUSTRIAL/ACADEMIC RESEARCH FACILITIES

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Introduction It is often difficult to conduct exposure assessment of chemicals in research facilities of chemical industries or universities, because of the characteristics of laboratory tasks – variety of chemicals handled, relatively short task duration, and irregularity. The comprehensive scheme of exposure assessment for such laboratories was developed, where laboratory staff are engaged in the risk screening stage, and implemented in the large science/engineering university in Japan.

Methods The first part of the scheme is risk screening in respective laboratories. Laboratory staff identifies major chemical handling tasks in their laboratory rooms at first. They perform exposure assessment for each tasks in three ordered steps;

1. qualitative judgment,
2. 'revised control banding' (a qualitative risk assumption scheme developed by Japan Industrial Safety and Health Association and the University-A), and
3. detector tube measurements.

During this process, the staff finishes the assessment of a task when the identified risk is 'low', or they proceed to the next step or take risk mitigation measures when the identified risk is 'medium/high'. The result of this process is then collected and examined by a few occupational hygienists who oversee the whole research facility. The hygienists perform personal exposure assessments for tasks having residual risk, as the second part of the scheme.

Result This scheme was implemented in Tokyo Institute of Technology (with 14 000 faculties/staff and students) for about one year. Exposure screening was smoothly performed by ab. 220 laboratory groups for ab. 2100 chemical handling tasks. The numbers of conducted assessments in steps (1,2), and (3) were; 2100, 1300, and 170 respectively. Tasks with medium/high risk were effectively squeezed out throughout the process. The number of high-risk tasks finally identified was quite small.

Discussion It has been demonstrated that the developed scheme is very effective and practical for exposure assessment in chemical research facilities.