Material and Methods The study population includes the total Danish working population of 5,478,664 workers, followed 1979–2015. Annual individual exposure to respirable crystalline silica was estimated using a quantitative job exposure matrix. Cases of ILD were identified in the National Patient Register. We conducted adjusted analyses of exposure-response relations between cumulative silica exposure and different types of ILD. Register studies in Denmark without biological materials do not need approval from the National Committee of Health Research Ethics. This study is approved by the Danish Data Protection Agency.

Results The risk of silicosis increased with increasing cumulative exposure with an incidence rate ratio (IRR) of 3.07 (95% confidence interval (CI) 2.40–3.93) in the highest exposure group (the highest tertile among the silica exposed) compared to the non-exposed group. The risk of other pneumoconioses was also increased with an IRR of 1.18 (95% CI 1.05–1.33) for the highest exposed compared to the non-exposed. For idiopathic ILD, ILD associated with connective tissue disease and other ILD the risks were increased in the highest exposure group compared to the non-exposed, but the analyses did not show clear exposure-response patterns.

Conclusion This study confirms an exposure response relation for occupational silica exposure and silicosis and indicates increased risks for other types of ILD. This warrants further examination of the specific risk patterns for different types of ILD.

Risk assessment

Operating Management System: An Integrated Approach to Deliver Safe, Reliable, and Compliant Operations at Petrochemical Sites and Refineries

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Introduction Operating Management System (OMS) is a universally validated framework that provides a systematic and consistent approach by managing four risks – People, Plant, Process and Performance for managing the Health, Safety, and Environment (HSE) performance and improve quality. A leading Indian petrochemical conglomerate introduced this framework that defines a set of operating requirements setting out a systematic way to improve operations towards building a sustainable organization. We have used protocols for occupational health monitoring, tasked based industrial hygiene monitoring and job specific PPE under the OMS and seek to show the subsequent changes in safety and health-related outcomes.

Material and Methods This study seeks to prove how the implementation of OMS has defined changes in People Risk Management through comparison of specific outcomes before and after the introduction of the intervention. These observations are based in the hydrocarbon production and refining business stretching across manufacturing and refining facilities. The implementation process initiated with internalisation of the OMS framework enabled through digital platform. Risk management was reinforced with technical risk analysis and putting in place mitigation measures through the project lifecycle by cross functional competent and experienced teams. In addition, developing a robust risk culture has been a focus, which included enhancing risk management competency among the leadership and the asset facing personnel.

Results Health index of the organisation, a composite indicator has moved from 87 to 89 per cent and the Emergency Management System score improved to nearly 94 per cent from 87 per cent subsequent to OMS. There has been an increase in collection of personal monitoring samples for noise (254 from 130) and toxic chemicals (234 from 55). There has been a reduction in the tonnages for Highly Toxic Material Inventory for ammonia, chlorine and hydrofluoric acid. The lost days have reduced from 5822 to 4374. Total 1184 high risk activities as per OH health hazards were identified through Risk assessment which were taken as workplace improvement projects and risk level has been reduced to Moderate and low level by implementing engineering control and 100% PPE compliance. There is significant reduction in LTIFR (per million man-hours) (Lost Time Injury Frequency Rate) to 0.13, year 2021–22 and improvement in uptime of the assets.

Conclusion OMS is very useful platform for continual improvement and significant reduction of HSE risk even with expanding businesses and newer challenges to the organization. As the experienced professional superannuate from the workplace and younger generation take charge, the OMS framework helps in knowledge retention and codification of skill and experience.

Respiratory effects/Diseases

POTENTIAL OCCUPATIONAL SENSITIZING EXPOSURES AND DEVELOPMENT OF ASTHMA: AN OVERVIEW OF SYSTEMATIC REVIEWS

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Introduction and Aim Several hundred occupational agents are suspected to be able to cause asthma. However, the amount and type of evidence for these agents is not clear. As a first step, we aimed to identify, appraise, and synthesise the scientific evidence in systematic reviews of the relation between potential occupational sensitizing exposures and development of asthma.

Material and Methods We conducted a systematic literature search where the study criteria included persons in or above working age, potential occupational sensitizing exposures, outcome defined as asthma, and study design restricted to systematic reviews. Potential occupational sensitizing exposures were divided into 23 main groups comprising both subgroups and specific exposures. Two of the authors independently selected studies and extracted study data. Assessment of study quality and evaluation of the confidence in each systematic reviews level of evidence was performed using AMSTAR 2.
Results A total of 27 systematic reviews were included comprising 1242 studies and 486 potential occupational sensitizing exposures. Three systematic reviews were rated as having high quality, 7 moderate quality, and 17 low quality. We found strong evidence for the main group of wood dusts and moderate evidence for the main groups of mites and fish. For subgroups/specific exposures, strong evidence was found for toluene diisocyanates, Aspergillus, Cladosporium, Penicillium, and work tasks involving exposure to laboratory animals, whereas moderate evidence was found for another 52 subgroups/specific exposures.

Conclusion In systematic reviews we identified hundreds of potential occupational sensitizing exposures suspected to cause asthma. Strong evidence was found for wood dust in general and for toluene diisocyanates, Aspergillus, Cladosporium, Penicillium, and work tasks involving exposure to laboratory animals. However, several well establishes sensitizers (e.g., enzymes, house dust mites, allergens from pets) have not or rarely been included in systematic reviews of occupational exposures, which is a limitation of the overview approach.

Irritants and allergens

O-341 OCCUPATIONAL HEALTH PROBLEM ASSESSMENT OF WORKERS INVOLVED IN COTTON HARVESTING OF HARYANA
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Introduction Cotton is one of the important cash crops of India and plays a significant role in agricultural and industrial economy. India is world’s second-largest cotton grower. It benefits textile industry and creates jobs in other fields. In the era of automation in the agriculture sector, India continues to practice manual cotton picking to preserve the quality of the fiber. Felling, delimbing, tracing, manual extraction and manual loading are some cotton harvesting techniques which have been reported to cause Occupational hazards such as repetitive strain injuries and hand skin related issues. This study focuses on determining skin related occupational hazards among cotton pickers.

Method This study was conducted in the Haryana state district, Hisar. For the study, seventy-three (73) farmers were considered. Age groups lies between 18–62 years and the experience of farmers were categorized into three groups <8 years, 9–15 years and >16 years. Interview was conducted among the farmers to identify the work-related problems. Modified Nordic Occupational skin questionnaire (MNOSQ) used to identify the skin-related issues and modified Boston questionnaire (MBQ) to identify the hand-related issues among farmers.

Results Symptoms like allergies, and lichenification on skin were highly prevalent among the workers (p<0.001) those with experience <3 years and were more likely to report rashes, allergies on skin (p < 0.001). According to the MBQ questionnaire, workers with experience >12 years were more likely to report hand tremors (p < 0.001). Through interviews conducted farmers reported that physical exertion is more in 8 to 9 long working hours.

Conclusion This study supports the evidence that the cotton farmers are at higher risks of developing skin infections and hand related problems. This study suggests immediate ergonomic intervention for reducing the occupational health hazards among the cotton farmers.