Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Results: The study of the socio-professional characteristics of the workers subjected to alternating work schedules revealed a majority male population (55.82%) with an average age of 25.75 years and a predominant age group of less than 45 years (78.64%). Half of the workers had less than five years of professional experience (50%). The majority of the workers had a 24-hour shift. More than half of the staff (63.59%) had moderate daytime sleepiness. The analytical study showed statistically significant associations between work on alternate hours and the occurrence of hypertension ($p=0.038$), hypercholesterolemia ($p=0.009$), diabetes ($p=0.024$), UGD ($p=0.013$), spinal MSD ($p=0.004$), sleep disorders ($p<0.0001$). In the female population, there was a statistically significant association between alternate shift work and the occurrence of spontaneous abortion ($p=0.018$) and the threat of preterm delivery ($p=0.001$).

Conclusion: Shift work has effects on the health of workers. They should be subject to special medical surveillance.

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The "Healthwise" Approach In Togo, From Pilot Centers To The National Strategy For The Promotion Of Safety And Health At Work For Health Workers (2016-2021)

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Introduction: In the majority of African countries and particularly in Togo, the safety and health conditions in their workplaces in the health sector are insufficient. Since 2016, the HealthWISE-WHO/ILO approach has been an effective tool for promoting occupational safety and health (OSH) in experimentation in the health sector in Togo. The objective of this analysis is to highlight the first positive impacts of this approach.

Materials and Methods: Analysis of the reports of the Health Centres Pilot Health Centres project by the HealthWISE-ILO/WHO approach and the implementation documents of the OSH Strategic Plan for Health Workers in Togo.

Results: The promotion of the improvement of occupational safety and health through the HealthWISE approach in the thirteen (13) pilot health centres had led to a clear advance in the field. Indeed, of the thirteen pilot centres, eight (8) had carried out a summary assessment of occupational risks and all the centres appointed HealthWISE focal points. Ten (10) health centres were able to carry out improvement action plans. Improvement actions are illustrated by improvements made in maternity wards, offices and intensive care units in some hospitals. Since 2020, the achievements of the implementation of the HealthWISE action plans have enabled a rapid response by integrating the strategy into the national response to the emergency response to the covid-19 pandemic with a view to protecting health workers.

Conclusion: the ILO/WHO HealthWISE approach and the implementation of the national strategy have led to a significant improvement in OSH in the health sector in Togo.

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The impact of the COVID-19 pandemic in the Influenza vaccination coverage of healthcare workers in a portuguese general hospital: a 9-year study comparison

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Introduction: Influenza seasonal infection claims half a million lives in the world every year due to complications. The most effective tool to prevent the seasonal flu infection is with an annual Influenza vaccine. Healthcare workers (HCW) are part of a high-risk occupational category, since they contact directly with flu patients, therefore the vaccination of these workers is paramount. After the breakout of the novel coronavirus disease (COVID-19), the prevention of the viral respiratory infections resurfaced to the public attention, including to HCW. The aim of this study is to evaluate the Influenza vaccination coverage of HCW in a general hospital located in Portugal (Centro Hospitalar do Baixo Vouga, Aveiro), in a 9-year timeframe.

Material and Methods: This study determined the percentage of our hospital HCW who received the Influenza vaccine by our Occupational Health and Work Medicine Service, from 2012 to 2020.

Results and Conclusions: Data shows a record-high vaccination coverage in 2020, the same year which the COVID-19 pandemic reached Portugal. Comparing to the previous year, data shows a 30% increase in the percentage of vaccinated HCW from all types (48.5% vs 37.4%). In comparison to 2019, the percentage of vaccinated nurse practitioners increased 24% (44.9% vs 36.1%) and the percentage of vaccinated physicians increased 46% (64.0% vs 43.9%). Although it is not possible to assume causality, this study suggests a correlation between the breakout of the COVID-19 pandemic and the increase in HCW Influenza vaccination coverage of this hospital.

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Work ability in Post-acute COVID-19 syndrome: one-month follow-up after Hospital discharge

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Introduction: Preliminary data suggest that about 10% of patients who have been tested positive for SARS-CoV2, remain unwell beyond three weeks. Little is known about work ability of COVID-19 survivors (C19W) after their discharge from the hospital.
Material and Methods: Sixty C19W (41M; age 53±9 yrs) admitted to Humanitas Research Hospital during the 2nd and 3rd outbreaks in Italy were consecutively enrolled at the time of hospital discharge (T0). Work Ability (WA) was assessed by the Work Ability Index (WAI) questionnaire after one month (T1) from hospital discharge. At T0, C19W were asked to retrospectively complete an additional questionnaire to assess their WA before COVID19 (PRE). The WAI score accounting for seven domains, ranges from 0 to 49 and provides a stratification in four WA categories. In the present study, we assessed the total WAI score at PRE and T1, in 33 C19W. Data are expressed as mean±SD. The present study was approved by the Internal Review Board (#2742/2020).

Results and conclusion: At PRE the WAI total score was 41.9±5.7 corresponding to “good category work ability” while at T1 was significantly lower (35.6±5.6; p<0.0001) corresponding to “medium category work ability”. Similar changes were observed in the WA domains except in the one exploring the “Prognosis of WA 2 years from now”. These results indicated that after one month from hospital discharge, the WAI of C19Ws survivors was still significantly reduced, thus suggesting the need for a whole-patient perspective clinical management including interventions to promote an appropriate return to work.

19. OCCUPATIONAL HEALTH IN THE CHEMICAL INDUSTRY
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Before and After Study to Reduce Chemical Exposure and Noise Level Exposure through CASHE (Change Agents for Safety, Health & Environment) Program at large Scale Petrochemical Industry

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Introduction: Reliance Industries Limited (RIL), Hazira manufacturing division is large scale petrochemical manufacturing plant, producing wide range of polymers and range of petrochemicals. To inculcate best practices in the field of occupational health and safety, an innovative idea was introduced in 2003 i.e., “CASHE” (Change Agent for Safety, Health & Environment).

Methods: In walk-through survey by a team comprising of members from Process, Safety and Occupational Health, a particular location having concurrent OH and Safety Hazards were identified, and quantitative assessment was done for Heat stress, Noise, Ergonomic issues, and chemical exposure monitoring. Similar parameters were studied post introduction of CASHE/ In first phase, comparison of our results with ACGIH guidelines gave us a clear picture of the existing occupational health hazard. In second phase, control measures were suggested, implemented and re monitoring was done.

Results: Before implementation of controls in the identified area, the noise exposure level was 90 dB and Emission of acidic acid vapor was as high as 1000 ppm. After implementing the best control measure of relocation by different design, there was significant reduction in noise exposure level by 15 dB and reduction in Emission level to 0 ppm.

Conclusion: CASHE program is back bone of Occupational Health improvements and reduction in OH Hazards. Control measures as implemented under CASHE program led to safer workplaces and enhances workers safety. This promotes and exhibits the culture of considering Occupational Health & Safety of an employee over production target.

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Respirable pet coke dust exposure reduction at Crusher Unit, Gasification complex through effective control methods

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Aim and Objective: To reduce exposure of pet coke dust and its health hazards to the workers.

Methods: To access exposure, airborne exposure measurement (breathing zone samples) of respirable particulates (< 4 microns) was collected for identified workers. The airborne contaminants were measured near to the breathing zone with approved method NIOSH 0600 to detect the Pet coke (Respirable) dust. The dust was collected using personal sampler (Make-SKC, Model-Air Check 2000 & 5000) at a flow rate 2.5 Lpm for the duration of 7-8 hours. Total 6 personal breathing zone samples were collected and found above the TLVs.

Intervention: After Qualitative and quantitative survey, meeting with all stakeholders conducted. Control measures (Water fogging, close cabins for operators, appropriate PPEs) identified according to hierarchy of controls

Results: In baseline survey, Total six samples were found above the occupational exposure limit recommended by ACGIH. The exposure limit was compared with Anthracite coal dust due to similar property structure of petroleum coke. After implementation of control measures, again six samples were collected and exposure was found within limits.

Conclusions: Effective control measures implementation and awareness for hazards control and PPEs helps in reduction of pet coke dust exposure to the workers. This will ultimately help to maintain workforce healthy.

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Research on Adverse Outcome Pathway (AOP) Development For chemical-induced and life factor-induced liver Disease

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The liver is major organ that metabolizes chemicals in the body, and exposure of workers to chemicals increases the prevalence of liver disease. Conventional method such as serum chemistry and hematology cannot differentiate between chemical-induced liver disease (CILD) and life factor-induced liver disease (LILD) early. However, Adverse Outcome Pathway (AOP) which is a new framework that use molecular indicator for chemical hazard assessment and regulation distinguish them on molecular level. Therefore, in this study, we built CILD and LILD AOPs and contribute to occupational disease prevention by confirming through what mechanism chemical substances affect LILD. CILD and drug-induced liver disease (DILD) AOPs were collected through AOP Wiki, and other LILD AOPs were accumulated by scientific paper survey. Also, networks of CILD and LILD AOPs...