

Challenges and Opportunities in Environmental and Occupational Health: Highlights of the First National Environmental and Occupational Health Forum

Proceedings of the First National Environmental and Occupational Health Forum held at AG New World Manila Bay Hotel, November 28, 2018

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PROCEEDINGS REPORT

Abstract

Environmental and occupational health are interconnected disciplines of public health that are concerned with maintaining a symbiotic relationship between the ecosystem and humans. This relationship is under threat by the continuous and alarming increase of the Earth's temperature causing climate change that impacts not just health but also the economy and the safety of the population. The First National Environmental and Occupational Health Forum was organized by the Department of Environmental and Occupational Health, College of Public Health, University of the Philippines Manila to address and discuss the complex issues that the Philippines is currently experiencing when it comes to environmental and occupational health by providing a space where stakeholders from different sectors can actively participate in mapping out challenges and opportunities. The organizer's long-term vision is to catalyze and build a network of collaboration that is geared towards the improvement of health and safety in the workplace that involves mitigating the effects of climate change. The discussions in the forum gave a comprehensive insight into the different challenges we face for being one of the most vulnerable countries to natural disasters: how this affects health, workplace, and environment. These challenges created new opportunities for the country to build resilience and formulate adaptive strategies to decrease the vulnerability of the population especially the workforce who are constantly exposed to different hazards that are exacerbated by changes in the environment.

Keywords: *Climate change, workplace hazard, one health, agriculture, displacement, emergency response*

Purpose of the Forum

The Philippines is experiencing rapid industrialization and urbanization resulting in various environmental and occupational health problems. Among these are deaths attributed to inadequate and unsafe water supply and sanitation facilities; chronic diseases brought about by air, water, and food contamination; general degradation of the environment; and overpopulation. Poor appreciation of the relationship among development, environment, and health needs to be addressed by informing and engaging key stakeholders to enable them to influence environmental and occupational health policies and initiatives. In line with this, the Department of Environmental and Occupational Health (DEOH), College of Public Health (CPH), University of the Philippines Manila (UPM) conducted the First National Environmental and

Occupational Health Forum on November 28, 2018 with the theme "Challenges and Opportunities in Environmental and Occupational Health." Being the SEAMEO TropMed Regional Centre for Public Health, the College of Public Health is at the forefront of capacity-building activities and advocacies for the improvement of the public health landscape in the country. The DEOH contributes to these initiatives by fostering dialogues and discussions, encouraging sharing of information and resources, and promoting collaborative activities among stakeholders to address challenges in the field of environmental and occupational health. The main purpose of the Forum is to provide a platform for key stakeholders to discuss recommendations to address priority environmental and occupational health issues and promote possible collaborations to ensure multi-stakeholder participation in addressing the pressing issues that our country is currently facing.

Keynote Speech

The keynote speech was delivered by Assistant Secretary of Health, Dr. Maria Rosario S. Vergeire. Dr. Vergeire discussed the importance of taking action to remedy environmental and occupational issues that our country is currently facing. The Department of Health (DOH) is focusing on its advocacy of addressing the different public health concerns like air pollution, water pollution, pesticides, organic solvent, and dust exposure by continuously fostering a partnership with other government, non-government agencies, and academicians. She described how the Inter-Agency Committee on Environmental Health (IACEH) was created as a gesture of recognition that health and environment are interconnected; protecting the environment will ensure a healthy society. Sectoral task forces have been delegated by DOH through IACEH to formulate plans of action specifically to address issues in environmental and occupational health; a plan that is aligned to the action plans stated in the National Environmental Health Action Plan (NEHAP) which was launched by the DOH and Department of Environment and Natural Resources (DENR) last September 26, 2018. Moreover, the DOH and DENR have strengthened its partnership with the international community by being a member of the Regional Forum on Environmental Health in Southeast and East Asian Countries. Dr. Vergeire expressed certainty that the forum will serve as a ground where stakeholders can formulate effective and practical measures that will solve our country's occupational and environmental health issues. She stated that the time to act is now and that we should be vigilant until we have won the battle against environmental and occupational health threats.

Presentations

Climate Change: Challenges and Opportunities for Environmental and Occupational Health in the 21st Century

Dr. Rokho Kim, Coordinator of the Health and Environment of the World Health Organization (WHO) Regional Office for the Western Pacific Region discussed the challenges and opportunities of climate change for environmental and occupational health. Climate change is a defining issue of humanity in the 21st century. He emphasized that the projected increase in temperature and sea level at the end of this century will have devastating effects on human and environmental health. Dr. Kim discussed the health risks related to climate change which are divided into three categories: (1) Primary which includes

direct biological consequences of heatwaves, extreme weather events and temperature-enhanced levels of urban air pollution; (2) Secondary including risk mediated by changes in biophysical-and ecologically-based processes and systems, particularly food yields, water flows, infectious disease vectors and (for zoonotic diseases) immediate-host ecology; and (3) Tertiary, which include more diffuse effects such as mental health problems in failing farm communities, displaced groups, disadvantaged indigenous and minority ethnic groups and consequences of tension and conflict owing to climate change-related declines in basic resources (McMichael 2013).

Dr. Kim stated that assessing the current environmental and occupational health situation is necessary because it will influence policy changes to prevent further degradation of human and environmental health. He expressed his appreciation to the Philippine government for recognizing environmental and occupational health as a priority and he gladly shared that the Director-General of WHO, Dr. Tedros Adhanom, also placed the health impact of climate change as one of his top five priorities. After he discussed the detrimental health effects of climate change, he shed some light by finally presenting the opportunities we can gain from this inevitable global event. He stated that despite all the problems, we have the opportunity to build resilience. His definition of resilience is "when there is shock and stress, the system does not fail but recovers." Through resilience, the vulnerability can be minimized by decreasing exposure and sensitivity to climate change while increasing adaptive capacity that will help in the process of recovery. Increasing adaptive capacity means building a more effective system when responding to the disastrous effects of climate change. Moreover, he introduced the Climate-Resilient Health System of the WHO as a system that could provide guidance on how to deal with the health effects of climate change by creating interventions that are preventive and curative. Dr. Rokho Kim remarked that good ideas cannot be translated into action without proper funding. He introduced an opportunity called the Green Climate Fund (GCF) which is an operating entity of the United Nations Framework Convention on Climate Change (UNFCCC). GCF has raised \$16 billion (pledge) from 42 state governments and has projected that by 2020, they will be able to mobilize \$100 billion per year. He concluded his presentation by reiterating that climate change is the greatest threat to environmental, occupational, and global health in the 21st century. However, along with these threats are opportunities that can help us build a stronger and more resilient nation through social movement and collaborative efforts.

Climate Change Induced Disasters, Displacement, and Mental Health

Dr. Hyun Kim, who is a visiting professor from the University of Minnesota presented data from the International Disaster Database demonstrating that there is a link between man-made and natural disasters. To further explain the correlation, he cited an increase in the production of motor vehicles over the years, and as the production increased so did the number of transport-related accidents which are man-made disasters. Transport accidents increased due to the growing number of people who utilize motor vehicles. The upsurge in the number of automotive vehicle consumers led to the increase in greenhouse gas production. Consequently, this increase in greenhouse gas production will cause disasters like typhoons or extreme drought that could lead to a shortage of basic necessities that can potentially catalyze conflicts and population displacement. Dr. Kim stated that the first reason for displacement is flooding caused by typhoons which are climate change-induced. He also pointed out that the Philippines is the most vulnerable country for this type of disaster. According to the 2015 data by the Internal Displacement Monitoring Centre (IDMC), the Philippines has the most displaced population by rate, which according to Dr. Kim, should be the country's top priority. He then proceeded to show more data demonstrating that in 2013 and 2014, the Philippines was one of the countries that had at least 3,500 people displaced per million inhabitants. Dr. Hyun Kim explained how vital it is to diagnose mental health illness, yet it is the most neglected issue among the displaced population. According to him, the main cause of mental health illness among refugees is the lack of economic opportunities. He discussed the mental health illness called "snow white syndrome" which manifested among the Syrian refugees in Sweden after they were asked to leave the country. He expressed that we have a responsibility to create a system that will effectively recognize mental health illnesses among the displaced population and to help them build resilience by providing equal opportunities.

One Health and Occupational Health

The main focus of the third session was the significance of One Health in addressing the issues of occupational health. This was discussed by Dr. Bruce Alexander who is a Professor and Division Head at the University of Minnesota. He explained that One Health is an old concept with a premise of unifying and interlinking the health of humans, animals, and environment which involves coordination, communication,

and collaboration of different disciplines and sectors (e.g. infrastructure, economics, animal health, politics, health care, etcetera) to resolve health issues. According to him, zoonosis cannot be resolved by dealing with humans, animals, and the environment as separate entities because awareness of how diseases spread through animals will give a clearer picture of how to prevent it. Furthermore, understanding how human activity changes the ecosystem can affect the health of both humans and animals. Dr. Alexander explained that he focused on occupational health in agriculture because there is a constant and intimate interaction between humans and animals in this industry. He revealed that the evolving animal agriculture has made the global food system complex and it created new problems such as the emerging infectious diseases from animals. Therefore, he emphasized that the application of One Health model will help plan and address the occupational health hazards by acknowledging that the way we handle animals and the environment is influenced by economics, agriculture, productivity, the technology used, and societal determinations. In summary, he reiterated that when dealing with occupational health issues we should look beyond the workplace. We should understand the driving conditions that can affect the workers, environment, and animals by engaging with different disciplines, and to congregate people who specialize in different sectors so that we can thoroughly understand the complexity of the problem.

Occupational Health in Farming and Pesticide Exposure

A video presentation was delivered by Prof. Jinky Lu of the National Health Institute of UPM. She tackled the issues regarding the occupational health of farmers who were exposed to pesticides. She cited some studies from other countries to point out how prevalent the problem of pesticide use is in the farming sector. In Indonesia, 23 organochlorine pesticides were found in food crops and a few commodities such as vegetables, rice, nuts, and fish. In China, neurobehavioral dysfunction was observed among farmers with a history of pesticide poisoning. In Sierra Leone, nausea, and respiratory and ocular problems were found to be higher among pesticide users compared to non-pesticide users. In Ethiopia, a significant number of farmers manifested respiratory, neurologic, dermal, and acute pesticide intoxication symptoms. Pesticide poisoning is common in the agricultural sector and has three categories according to severity of exposure: mild, moderate, and severe. In mild poisoning, the symptoms are body malaise, nausea, vomiting, diarrheal stool, sweating, abdominal pain, and salivation. In moderate poisoning, we could observe

dyspnea, decreased muscular strength, bronchospasm, miosis, muscle fasciculation, and tremors. And in severe poisoning, manifestation such as cyanosis, sustained hypotension, extreme muscle weakness, paralysis, and respiratory paralysis particularly caused by carbamate group of pesticides can be observed. She mentioned the classifications of pesticides according to active ingredients which are: carbamates, nitrophenol, organochlorines, organophosphates, pyrethroids, rodenticides, and thiocarbamates. According to literature, children who were exposed to pesticides were found to have less generalized physical endurance, a decrease in the ability to catch a ball, lesser fine eye-hand coordination, difficulty in grasping the concept of repeating, and inability to draw a person; concluding that the developmental stages of children can be affected by pesticide exposure. General international obligations have been drafted to protect the farming industry, the farmers, and the consumers from the debilitating effects of pesticides. These commitments and obligations are: the United Nation's (UN) environment program for international registry of potentially toxic chemicals, WHO's International Program on Chemical Safety that sets out the limits for pesticides exposure in terms of toxicity rating, and Food and Agricultural Organization (FAO) for pesticide residues on food and food commodities and ASEAN occupational safety and health networks. In conclusion, Prof. Jinky Lu hoped that more research will be conducted for the protection of our local workers most especially in the agricultural sector and that policies will be formulated to strengthen environmental and occupational health. She also stated, "we have to globalize evidence and localize the decision-making processes, this tackles globalization issues and its relation to the local context."

Occupational Health Emergency Response: Single, Mass Casualty, and Disaster Medical Emergency Response Strategy of the First Philippine Holdings Corporation

Dr. Joselito L. Gapas, Occupational and Environmental Health Executive of the First Philippine Holdings Corporation discussed the importance of having an occupational health emergency response to mitigate the aftermath of disasters and formulate adaptive strategies as a response to climate change. He mentioned that the Philippines ranked fifth in the list of countries vulnerable to natural disasters and that over the last five years, our country has experienced four of the most catastrophic typhoons. He explained that adaptability to climate change and preparedness for disaster has become a very good business among private sectors. Their aim, when preparing and responding to a disaster, is to achieve seamless

coordination and integration. Dr. Gapas shared that they used to utilize a tier-based emergency response system for single and multiple casualty incidents. He said that they were always prepared and good at responding to disasters; their response teams were trained and properly equipped. They were very comfortable with their established system until typhoon Yolanda came and wreaked havoc to their largest geothermal power plant in Leyte. They discovered that their efficacious emergency response plan was ineffective, inadequate, and insufficient because their own response team became victims of the typhoon. This experience became a learning opportunity for their company which prompted them to create a better and stronger emergency response plan. He said that they acknowledged the fact that a catastrophes like Yolanda can happen again, so they formulated a plan that is more resilient and able to adapt to climate change.

He shared their new emergency response plan and pointed out that their new approach do not just focus on what to do during disasters but integrate a pre-event component where the focal points are training, preparing, practicing; doing drills and educating to ensure that the disaster response team is always ready. The second component is the during-event where they remove the non-essential personnel from the site because, in this stage, they have a guiding principle which is "be safe, we do not need dead heroes." Their main goal in a during-event scenario is to keep everybody safe. The third component is the post-event which is the day after the disaster. In this scenario, the company provides security and safety to their workers and their families. He explained that not until they have assured a haven for their workers' families will they expect their employees to function effectively in the workplace. The last component of the emergency response plan is the rehabilitation and recovery of the community where the company continuously provides health support and services. In addition, Dr. Gapas mentioned that after a disaster, they also address mental health issues because they have learned that after typhoon Yolanda, a lot of employees and families suffered from post-traumatic stress disorder.

The Notification System of Occupational Diseases and Injuries in the Philippines.

Dr. Vivien Fe F. Fadrilan-Camacho, Associate Professor and College Secretary of UP-CPH, discussed the findings of her study which showed that there are issues in policies, coordination, awareness, capacity, and resources when it comes to our country's notification and recording system of

occupational injuries and diseases. She recommended that the Occupational Safety and Health (OSH) standards should be updated, strictly implemented, and made more adaptable to Micro-Small and Medium Enterprises (MSMEs), public, and informal sectors. Despite these issues, she expressed hope that the newly implemented law, RA 11058 or the Act Strengthening Compliance with Occupational Safety and Health Standards, will improve compliance and strengthen implementation especially in the submission of reportorial requirements that are vital for the notification and recording system. Dr. Camacho also emphasized the need to implement the Joint Administrative Order (JAO) 2017-0001: National Occupational Health and Safety (NOHS) Policy Framework to create an effective information system that will efficiently integrate all data from different agencies and sectors so that there will be a centralized system that will make collation and analysis effortless. This proposed information system can potentially lead to action and changes to further promote occupational health and safety. Moreover, awareness must be propagated by recognizing organizations and individuals through OSH awards. The occupational safety and health culture should be strengthened through promotion and advocacy campaigns by involving relevant agencies, employers, workers, and the community. She recommended that the government strengthen its capacity and resources by adequately allocating manpower, equipment, infrastructure, and technology to maximize the proposed information system. More importantly, incorporating health and safety in the curriculum of the education system will build continuous culture awareness.

Challenges for Occupational Health from Globalization

Dr. Jorma Rantanen, former President of the International Commission on Occupational Health and Advisor to WHO, asserted that we have to pay careful attention to the ever-changing work life caused by globalization because it does not just bring opportunities but also great threats in occupational health. He mentioned some of the consequences of globalization: increase in informalization of workers, growing morbidity due to emerging work-related diseases, easy spread of diseases; increase in job insecurities due to new working contracts and growing inequities between working class. He emphasized that the informal sectors are the most vulnerable to occupational hazards because they do not have legal protection, no labor contract, no health insurance, no social security, no pension and other crucial services that could protect them from harm. Dr. Rantanen mentioned new occupational diseases that are related to working hours. Shift work can cause an increase in

mental stress syndrome, diabetes, and breast cancer and according to him, these are the new morbidities in the globalized world. He illustrated how the psychosocial quality of work can increase cardiovascular mortality. He presented data that showed a five-fold increase in the risk of coronary heart disease among employees who remained in a company that underwent downsizing. But four years after such crisis, the number of risk normalizes; emphasizing that this was the result of the modern work life and that we have not been prepared for this type of event. He stated the need for Basic Occupational Health System because according to research, when there is organized occupational health services, the competitive needs are met, it supports GDP per capita, and it also supports the human development index. And so far, countries that provide occupational health services to their population do not experience bankruptcy and they enjoy a thriving economy. In conclusion, he shared his personal thoughts on how we can get out of poverty by showing a poverty elimination cycle diagram. The diagram showed that we need good education, decent work, good health, security, skill, and competence. These requirements will produce good workability and decent work employability that will consequently generate income that will lead to the satisfaction of basic needs, increase in consumption, and development of economic activity.

National Environmental Health Action Plan 2018-2022: Challenges and Opportunities

Dr. Paulyne Jean B. Rosell-Ubial, an adjunct professor in the Department of Health Policy and Administration of UPM, proudly shared that the second edition of NEHAP 2017-2022 is already available for download via the DOH website. She urged the occupational and environmental health stakeholders to utilize the action plans to create a positive impact for our country. The priority concerns that were identified in NEHAP were waste management and disposal, air and water quality, and the effects of climate change on human health. Regarding waste management and disposal, Dr. Ubial stated that local government units (LGUs) were already given the mandate to formulate a plan for waste management and sanitary landfills. She emphasized that the issues in waste management are not restricted to the LGUs but a problem for the whole country and she urged everybody to take action. She expressed concern about the air and water pollution, that if we do not take action to remedy the issues today, we might suffer the aftermath in the near future. For the past five years, the Philippines has been devastated by very strong typhoons that resulted to a dilatory recovery pace of the areas

involved. These events, according to Dr. Ubial, were caused by climate change so she urged that we make the fight against climate change a top priority. Moreover, she encouraged that we strengthen our country's risk reduction and disaster management action plans so that we will be well-prepared during disasters. Dr. Ubial pointed out that the NEHAP is aligned with the five Sustainable Development Goals. One of those goals is to protect labor rights, promote a safe and secure working environment for all workers including migrant workers, women in particular, and those on precarious employment. She stated that the way forward is to work together and leave no one behind and to take care of the people from regions who are most vulnerable to climate change. She also reminded that we only have one planet and the activities of one country can affect another. She also mentioned that the gains of development must be shared, that pollution and waste reduction must be a joint effort by all countries to attain a quality of life that is acceptable to all.

Potential Sources of Particulate Matter 2.5 (PM2.5) in Hospital Indoor Air

Asst. Prof. Rose Abigail D. Enoveso of the CPH-DEOH described air pollutants as invisible killers. She presented statistics from WHO which stated that 25% of deaths from heart disease were linked to air pollutants and 1.8 million deaths per year were due to lung disease and cancer. She explained that pollutants are trapped indoors and because we spend 90% of our time indoors this makes us vulnerable to lung diseases. She emphasized that PM2.5 is one of the most harmful types of particulate matter because it can lodge deeply into the lungs due to its fine nature. PM2.5 may contain toxic inorganics such as metals, sulfates, and nitrates and it can also serve as a carrier of pathogenic microorganisms. Asst. Prof. Enoveso explained that it is significant to know the source of PM2.5 so that hospitals can formulate indoor quality management strategies to strengthen hospital insulation and engineering controls that will protect patients, visitors, and personnel. The study aimed to serve as the first source of apportionment for indoor air pollution in the Philippines which can be a basis for future research and as supporting data for the formulation of policies or programs to prevent morbidity and mortality related to PM2.5. She shared the conclusion of their study which showed that the outdoor source was greater than the indoor source. All sources were anthropogenic except soil dust and sea salt and more sources were identified in naturally ventilated wards compared to mechanically ventilated wards. She recommended that there should be a

reinforcement of hospital engineering controls and building insulation, and the formation of the Indoor Air Quality Monitoring Program (IAQMP).

Challenges on Water Supply, Sanitation, and Hygiene Systems in Healthcare Facilities

Dr. Bonifacio B. Magtibay, a Technical Officer on Environmental and Occupational Health of the WHO Country Office, revealed the staggering statistics regarding the Water Supply, Sanitation, and Hygiene System (WASH) in health care facilities (HCF) around the globe. According to WHO and the United Nations Children's Fund (UNICEF), about 40% lack water supply, 20% have no sanitation facilities, and about 35% of the facilities lack water and soap. Moreover, other studies showed that 50% of confined patients develop infection due to lack of WASH facilities. Dr. Magtibay identified some issues and created appropriate recommendations for each. The first issue was that the HCF in Region XI had no specific standards for WASH. So, He recommended that the DOH develop specific standards that are applicable to all types of HCFs and include these standards during the accreditation by the Philippine Health Insurance Corporation (PhilHealth). Most importantly, these standards should focus on water quantity, monitoring of water quality, number of toilets, and desludging of septic tanks and drainage systems. The second issue was about inadequate training on health care waste management and infection control. To address these issues, the DOH should develop training for management and control that will involve the Rural Health Unit (RHU) and Barangay Health Station (BHS) staff. The third issue was the absence of standard operating procedures (SOP) for housekeeping and the practice of improper storage of supplies. He recommended that the DOH should develop an SOP for cleaning, allocate funds to BHS, and provide a proper storage room for all HCFs. The last issue was the lack of system and funds for desludging septic tank and fixing drainage. He recommended that the LGU should provide desludging services and fix the drainage system. Moreover, the DOH should finalize the Green HCF standards and conduct training for all LGUs. Dr. Magtibay concluded his presentation by sharing the different projects that the WHO is currently undertaking to help the country with its WASH. One of the programs that started this year and will last until 2022 is the Department of Foreign Affairs and Trade (DFAT) project by the Australian government. It will support and develop a monitoring system for WASH and Greening in HCF. Also, the WHO wants to develop trainers for WASH and adopt the WASH Facility Improvement Tool (FIT) manual as an assessment tool for improving WASH in the country.

Carcinogenic Health Risk of Fish from Laguna de Bay

Dr. Victorio B. Molina, an Associate Professor of CPH-DEOH, started his presentation by stating one of the four laws of Ecology: everything is connected to everything else. He pointed out that there is a complex connection between living creatures but in the end, it is always our health that will be impacted the most. The objective of Dr. Molina's study was to assess the potential carcinogenic risk to human health associated with the biomagnification of arsenic in fish products from Laguna de Bay. He explained that they utilized the health risk assessment to understand the interactions among the different factors of the DPSIR (drivers, pressures, state, impact, and response model of intervention) framework. The driving forces (e.g. increase in population, industrialization, policies) in the health risk assessment creates pressure (e.g. agriculture, domestic waste, and conflicting water use) to the environment which then produce an impact on the ecosystem that could potentially compromise public health. He added that food production is the most affected service when the ecosystem becomes compromised. For the methodology, Dr. Molina divided the lake into eight sampling sites and two sampling frequencies, dry and wet season. The result of the study showed that *Tilapia* and Bighead Carp compared to *Bangus*, *Kanduli* and *Dalag* have the highest carcinogenic risk for both dry and wet season. He then concluded that from the point of view of disease prevention, the long-term consumption of five commercially important fish species from Laguna de Bay may cause a significant carcinogenic health risk.

Conclusions

The Philippines is one of the top five countries that is highly exposed to natural disasters and such state is being exacerbated by climate change. Climate change is affecting both occupational and environmental health which places the country and its ecosystem in a disastrous cyclic event such as drought, typhoons, and flooding. Up until now, no concrete and long-term solutions have been formulated to fully remedy or even attenuate the impacts brought by these catastrophic events.

The First National Environmental and Occupational Health Forum established four significant conclusions. First, collaborative efforts from different sectors will be beneficial for our country. As pointed out in the concept of One Health, the teaming up of various specialized sectors will create a more thorough review of the systems involved that will facilitate the even formulation of solutions when it comes to

the workplace, environmental health, and adaptation to climate change. Second, the catastrophic effects of climate change can be mitigated by increasing our adaptive capacity and building resilience. As exemplified by the First Philippine Holdings Corporation, recognizing the opportunities in our failures will help us develop a better and more efficacious system. Third, our government should recognize that the growing threats against our workforce and ecosystems have been impeding our economic development. The time to radically act is now, through strict policy implementation and monitoring, interagency participation and cooperation; exploiting international aid and maximizing technology to upgrade our information system. Lastly, this forum has successfully achieved its objective to create a venue where stakeholders can engage in recognizing current and emerging issues at a national level. Solutions have also been discussed but there is a strong indication for a second forum that focuses on best practices for environmental and occupational health.