

mining method for predicting risk factors. In addition, the predictive powers for the two methods were compared to demonstrate the effectiveness of data mining in analyzing a large data set. In the analysis, 293,144 workers in 200 workplaces from the 2007 health examination data were analyzed for two chronic diseases: hypertension and diabetes. The results showed that smoking and exercise were important factors influencing these chronic diseases. Specifically, smoking, exercise, and age between 45 and 54 were significant factors for hypertension, while smoking, exercise, and job type (office work or production work) were significant factors for diabetes. In contrast to previous studies, decision tree analysis gave more accurate results than logistic regression in predicting hypertension and diabetes, showing that data mining can be a useful analytic tool for predicting chronic diseases. Further, it provides segment-specific information on risk factors to support WHP for the specific target group.

OT23-7

Water-Related Environmental Health Problems in Bangladesh

A S Mohammad Nurullah Awal¹, M N Sani², M A Kadir³, S Mahjabin⁴

1. ORBIS International, Bangladesh
2. BRAC University, Bangladesh
3. North-South University, Bangladesh
4. BIRDEM, Bangladesh

Background: Bangladesh, a hugely populated, riverine country and the largest delta in the world, is gradually facing tremendous adverse consequences of water-related problems. **Objective:** This paper aims to articulate the common health problems with evidence and case studies in relation with water. **Materials and methods:** Ample scientific articles including case studies, newspaper articles, social reports and discussion were reviewed.

Result: Rainfall, high or low, is interlinked with instigation of diseases like malaria, dengue or hepatitis. There are complex relationships with problems of water quality, availability, sanitation, and hygiene. Extreme weather—floods or droughts-- increase the risk. Decrease in water supplies lower the efficiency of local sewerage systems and increase concentration of pathogenic organisms. Diarrheal diseases have two peaks-- pre and post monsoon. Cholera cases are reported mainly in the warmest season. Arsenic is another threatening problem. Floods are the most common natural disaster, specially of 1974, 1988, 1998 and 2004. With climate change, rainfall and sea level rise are expected to increase the frequency and intensity of floods. Flood-related injuries and mental problems are increasing. Other problems includes keratitis, skin diseases and helminthiasis. Besides, poor agriculture, salinity intrusion, drainage congestion, cyclone and storm surge and draught; in turn affecting health.

Conclusion: Safe water is in MDGs and a basic human right. Water and sanitation problems needs proper care and support to achieve a sustainable development.

OT23-8

The Blood Lead Concentration and Hemoglobin Level of Gasoline Station Worker in Makassar City, Indonesia

Hasanuddin Ishak, Alfina Baharuddin
Hasanuddin University, Indonesia

The study aim to analyze the correlation of blood lead concentration and hemoglobin level. Age, working duration and exposure time, smoking habit, and consuming canned drink are thought as the contributing factors of blood lead concentration. The study was cross sectional study was conducted at 46 gasoline station workers in Makassar. The samples were selected using cluster random sampling. The data were analyzed by using chi square and multiple regression. The results indicate that the average blood lead level (33.7 µg/dl) is still in normal limit, whereas the hemoglobin level (12.9 µg/dl) decreases. The chi square analysis ($p < 0,05$) indicate that there is a correlation between the increase of lead level and decrease of hemoglobin level. Interaction with age (20-39 years), working time (≤ 8 hours/day), working duration (> 1 year), smoking habit 17 (81%) of which the Pb and Hb are abnormal, and habit to consume canned drink 16 (80%) of which the Pb and Hb are abnormal. The multiple regression analysis indicated that working duration and smoking habit have an interaction between lead level and hemoglobin level. It could be concluded that working duration and smoking habit were the highest factors contributing to increased lead concentration and to decreased hemoglobin level of the blood gasoline station workers

OT23-9

How Sand Storms Impact the Environmental and Human Health in Taiwan

Winston T Dang
Taipei Medical University, Taiwan

How sand storms impact the environmental and human health in Taiwan Winston Dang(1), Yu Chi Chu(2), Shuenn Chin Chang(2) (1).Taipei Medical University (2).Taiwan EPA* Abstract: Seasonal winds and high-pressure systems are moving dust with air pollutants (Lin et al., 2005), mercury and dioxin from China to Taiwan (approximately 60-70% to Korea and Japan area, 30-40% to Taiwan). With worsening desertification in China and climate change, China's dust storms are increasing in frequency and intensity. Dust storm frequency from China are have increased nine-fold since 1994, once annually in 1994 to nine times per year 2004. On the average, there are four to five dust events and 6.1 dust days in a year in Taiwan (Liu et al., 2006). On April 25, 2009 Taiwan experienced the highest PM10

(Particulate Matters) in the history reached 1000 $\mu\text{g}/\text{m}^3$ (Chang, 2009). China's rapid industrial growth has led to steep increases of air pollutant emission. In addition to high increases in the density of PM₁₀ during the dust storms, mercury, copper, sulfur dioxide, sulfates levels have become more prominent in long-range transport of air pollutants. In comparison of daily dioxin level to the day of sand storm, the level has almost double in PCDD/F content (Chi et al., 2008). Chang et al. (2009) indicated that the concentrations of atmospheric PCDD/F and mercury could be as high as 69.8 fg-I-TEQ/ m^3 and 4.18 ng/ m^3 , respectively, during the Northeast monsoon episode. It reveals that the importance of hazardous atmospheric pollutants concentration via long-range transports in air quality management and health concern. Studies between 2003-2004 (Wu et al., 2007; Wu et al., 2004) indicated that there is also a higher density of fungus in Northern part of Taiwan during sand storms, including Non-sporulating Fungi, Cladosporium, Penicillium, Aspergillus and Curvularia. Some species have been found to only exist when sand storm attacked: such as Botrysporium and Trichothecium. Several studies indicated that the presence of sandstorms may be associated with increased risk of hospital admissions or even increase more respiratory death cases. Exposure to ambient air pollution may be associated with increased risk of respiratory and cardiovascular hospital admissions in Taipei and other regions with similar air pollution episode (Chen et al., 2004, Yang et al., 2005, Chan et al., 2008, Bell et al., 2008). How to prevent the sand storms impact the environmental and human health in Taiwan become a major issue in policy decision process for the Government. *The views expressed in this paper are author's and do not reflect official positions of the Taiwan Environmental Protection Administration.

Oral Track 24- Occupational & Environmental Health

OT24-1

Rising Concerns of Occupational Health in Mongolia: Analysis of Incidence Rates of Occupational Diseases During 1986-2006

Shagdarsuren Oyunbileg¹, Jung-Der Wang¹, Nyamjav Sumberzul², Lkhaasuren Oyuntogos², Jamsranjav Javzmaa³

1. National Taiwan University, Taiwan

2. Health Science University of Mongolia, Mongolia

3. Sanatorium and Rehabilitation Centre for Occupational Diseases, Mongolian-Russian "Erdenet" CoLT, Mongolia

Objective: The industrialization of Mongolia over the last two decades has raised a concern on occupational health. The purpose was to determine the incidence rates and time trends of major occupational diseases in Mongolia.

Method: We retrieved information from all 4598 patients who were diagnosed and registered as having occupational diseases by the National Research Center of Workplace Condition and Occupational Diseases (NRCWOD) in Mongolia during 1976-2005.

Results: The annual incidence rate per million person-years of occupation-related respiratory diseases (ORD) was increased by almost 2 times, musculoskeletal diseases by 5 times, and skin diseases by 4 times during the study period. Pneumoconiosis decreased slightly, but asthma and dust related chronic bronchitis nearly tripled. Although the cumulative incidence rates in workers aged 30-59 years (CIR30-59) of ORD have been decreasing from 8.03% to 2.90% per year in the workers with high-exposures, total numbers of newly developed ORD has increased about 3 times, indicating more people employed in such industries and the need for proactive prevention. Moreover, the incidence rates of ORD for the non-exposed and low-exposed workers also increased.

Conclusion: Numbers of occupational diseases have increased during the last two decades because of expanded employment in industrial sectors. Actions must be taken immediately to allocate more resources for the development of health manpower on early recognition and prevention of occupational diseases, establishment of a comprehensive hazard communication system, and the enforcement of all regulations.

OT24-2

Birth Month, Mold, and Risk of Atopic Dermatitis in Early Infancy

Chi-Hsien Chen, Bing-yu Chen, Leon Guo

National Taiwan University, Taiwan

Background: Several studies have found the association between month of birth and the development of allergic diseases. Knowledge concerning the effect of the interaction between perinatal indoor conditions and seasonality on atopic dermatitis is limited.

Objects: To evaluate the seasonality of atopic dermatitis (AD) in Taiwan and find out the potential lead role of indoor conditions in the effect of seasonality

Methods: 21248 infants born in 2005, who had participated in the Taiwan Birth Cohort Study, were evaluated at 6 months of age by questionnaires completed by their parent or caregivers. Multivariate logistic regressions were used to adjust gestational age, maternal age, gender, parental education, family income, and parental atopic history. Two stage analysis was used to calculate adjusted incidence of AD in each month of birth.

Main Result: Total 1467(6.9%) infants had atopic dermatitis before six months of age. Month-of-births distribution of AD children was significantly different from non-AD references. In AD children, month-of-births distribution of AD children with mold on wall in their house was significantly different from those living without mold. After adjustment, fall, summer, and winter pose higher risks of AD compared to