



720 South Colorado Blvd.
Suite 1000-N
Denver, Colorado 80246 - 1926
Phone (303) 756-9090
Fax (303) 691-9490
www.neha.org

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January/February 2010

Assessment of Athletic Health Care Facility Surfaces for MRSA in the Secondary School Setting

Kyle Montgomery, LAT, ATC
Timothy J. Ryan, PhD, CIH, CSP
Andrew Krause, PhD, LAT, ATC
Chad Starkey, PhD, LAT, ATC

Abstract

Methicillin-resistant *Staphylococcus aureus* (MRSA) was once largely a hospital-acquired infection, but increasingly, community-associated MRSA (CA-MRSA) is causing outbreaks among otherwise healthy people in athletic settings. Secondary school athletic trainers, student athletes, and the general student population may be at elevated risk of MRSA infection. To identify the prevalence of MRSA on surfaces in high school athletic training settings, 10 rural high school athletic training facilities and locker rooms were sampled for MRSA. Results showed 90% of facilities had two or more positive MRSA surfaces, while one school had no recoverable MRSA colonies. Of all surfaces tested ($N = 90$), 46.7% produced a positive result. From this limited sample, it is evident that significant exposure opportunities to MRSA exist in athletic training clinics and adjacent facilities for both the patient and the clinician. Furthermore, the findings point to the need for community hygiene education about skin and soft tissue infections like MRSA.

Prevalence of Community-Associated Methicillin-Resistant *Staphylococcus Aureus* in High School Wrestling Environments

Bethany Stanforth, LAT, ATC
Andrew Krause, PhD, LAT, ATC
Chad Starkey, PhD, LAT, ATC
Timothy J. Ryan, PhD, CIH, CSP

Abstract

Methicillin-resistant *Staphylococcus Aureus* (MRSA) was predominantly a hospital-acquired organism; recently, however, community-associated MRSA (CA-MRSA) has been causing outbreaks in otherwise healthy individuals involved in athletics. As such, CA-MRSA is of emerging concern to sanitarians and public health officials. Secondary school athletic trainers and student athletes may be at elevated risk of spreading or contracting MRSA. The absence of proper hygiene protocols or equipment may further increase this risk. In the study discussed in this article, environmental samples were obtained to identify the prevalence of MRSA on surfaces in high school athletic training and wrestling facilities mats in nine rural Ohio high schools. Frequencies and descriptive statistics were prepared. All nine (100%) of the sites tested had at least one positive sample for the presence of MRSA. The need for heightened sanitation, hygiene education of affected persons about skin and soft tissue infections like MRSA, and intervention opportunities for public health professionals are discussed.

A Pilot Survey of In-Service Home Arsenic Tracked in from Chromated Copper Arsenate-Treated Decks

Cole Sigmon
Steve Patch, PhD

Abstract

Arsenic is a known carcinogen. It is also known to be readily dislodgeable from chromated copper arsenate (CCA)-treated lumber. The floors of in-service homes were tested for inorganic arsenic using a wipe method similar to the U.S. Housing and Urban Development (HUD) method for lead dust clearance sampling. Additionally, a hand-sampling method was used that involved direct dermal contact with the indoor floor surface. Amount of dislodgeable arsenic on the decks was highly correlated with arsenic concentrations on the indoor floors. Indoor arsenic concentrations were highest directly adjacent to the door. Concentrations in samples taken from the middle of rooms were less than half the concentrations of door samples, while concentrations in samples taken from untrodden floor space in the corners were mostly below the method detection limit. At a home without a CCA-treated deck, no measurable arsenic was found.

The Role of Environmental Health in the Health Care System

Monroe T. Morgan, DrPH

Abstract

What determines the health of the over 6.7 billion people in the world? What determines the health of the over 306 million individuals who currently inhabit the United States of America? The pressure of rising health care costs increases the need to understand the determinants of health and the role of environmental health in the health care system. In his guest commentary, Dr. Morgan discusses the four basic determinants of health: hereditary or biological factors, medical care, lifestyle, and environment.

(Compendium): Nitrate and Nitrite Levels of Potable Water Supply in Warri, Nigeria: A Public Health Concern

John Kanayochukwu Nduka
Orish Ebere Orisakwe, PhD
Linus Obi Ezenweke

Abstract

In this study, the authors investigated the nitrate and nitrite in different water sources (surface water, shallow well water, and borehole water) in the market and industrialized areas of Warri in the Niger Delta area of Nigeria. The authors' goal was to find the comparative levels of nitrates and nitrites from these two parts of the community. They selected five sampling sites from industrialized areas and another five from market areas. Nitrate and nitrites were determined using a DR/4000 UV-Vis spectrophotometer. The appreciable quantities of nitrates and nitrites found in these investigations have some public health implications. This study suggests that indiscriminate disposal of waste and poor sanitation may be additional contributing factors in the nitrate pollution of the water supply in the Niger Delta area of Nigeria.

(Compendium): Meeting the Environmental Health Training Challenges of the Local Public Health Workforce in Massachusetts

Kathleen MacVarish, MS, RS/REHS
Donna Moultrup, RN, CHO
Steven J. Ward, MA, MPH, REHS

Abstract

In Massachusetts, the public health delivery system is mainly decentralized with 351 municipalities providing a large array of environmental and public health services through their local health agencies (boards of health or health departments). In many other states these services are delivered at the county or state agency levels, but in Massachusetts they are provided by each city and town. In addition to issues related to staff size and funding of agencies, a major workforce training gap exists in Massachusetts. In an effort to address this training gap with a comprehensive course that would introduce new and current staff members to their roles and responsibilities when working in an LHA in Massachusetts, volunteers from the Coalition for Local Public Health (Coalition), which includes the Massachusetts Environmental Health Association (MEHA), attempted to create a curriculum that would cover the full scope of these responsibilities.

(Compendium): Exposure to Video Display Terminals and Risk of Small-for-Gestational-Age Birth

Fabio Parazzini, MD
Francesca Chiaffarino, ScD

Liliane Chatenoud, ScD
Sonia Cipriani, ScD
Elena Ricci, ScD
Vito Chiantera, MD
Renata Bortolus, MD
Cristina Maffioletti, MD

Abstract

In this study, the authors analyzed the association between video display terminal (VDT) use before and during the three trimesters of pregnancy and risk of small-for-gestational-age (SGA) birth in a case-control study. The cases for this study were 555 women who delivered SGA births. The controls were 1,966 women who gave birth at term to healthy infants of normal weight. In terms of the length of exposure, the odds ratios (*OR*) of SGA birth were 1.2 for less than one hour and 1.3 for between two and 20 hours per week. For higher usage (more than 20 hours per week), the *OR* was 1.2 (95% *CI*: [Confidence Interval] 0.9–1.7). The authors conclude that this study does not show any association between VDT use and risk of SGA birth.

(Compendium): Public Health Ecology

Christopher J. Coutts, MPH, PhD

Abstract

The objective of this column is to offer public health ecology as a method to conceptualize the deleterious connections between land conservation and human health. A vital part of our efforts in sustainability and creating ecologically sensitive and health-supporting environments is the conservation and rehabilitation of the green infrastructure that delivers not only basic environmental needs essential to sustaining life but also the behaviors that ameliorate chronic disease. Public health ecology adopts the interrelationship between humans and their environment, and the quality of this relationship is measured in the health of the persons who are dependent on its form and structure.

(Compendium): Urban Heat Island and Air Pollution—An Emerging Role for Hospital Respiratory Admissions in an Urban Area

Li-Wei Lai, PhD
Wan-Li Cheng, PhD

Abstract

The aim of the study discussed here was to determine the associations among the urban heat island (UHI), air quality, and hospital respiratory admissions in the warm center of an urban area. The authors collected and analyzed the data regarding air quality parameters, meteorological parameters, and the daily hospital respiratory admissions in the Taichung metropolis in the autumns of 2003 and 2004. By collecting the vertical meteorological parameters and air pollutant concentrations via the tethered balloon

technique, the authors simulated convergence in Dali using The Air Pollution Model (TAPM) for the atmospheric conditions. The authors also examined the hypotheses with Duncan's Multiple Range test, and analyzed spatial patterns vis-à-vis air temperature, air quality, and hospital respiratory admissions with GIS. The results indicated that the UHI phenomenon—which generates convergence and then transports air pollutants to a metropolitan area—increases hospital respiratory admissions in the warm center of an urban area.

(Compendium): Metal Concentrations in Blood and Hair in Pregnant Females in Southern Sweden

Lars Gerhardsson, MD
Thomas Lundh, PhD

Abstract

The study described here was comprised of 100 pregnant females from two prenatal care units at the cities of Hassleholm and Simrishamn in southern Sweden. It included a questionnaire as well as whole blood (total mercury, cadmium, and lead) and hair (total mercury) sampling (collection period 2002–2003). The median values of total mercury (B-Hg 0.70 µg/L; range 0.27–2.1 µg/L), cadmium (0.30 µg/L, 0.05–4.8 µg/L) and lead (11.0 µg/L, 4.2–79 µg/L) in whole blood were low in the total material, as were the hair mercury concentrations (Hair-Hg 0.22 µg/g, 0.04–0.83 µg/g). In a multiple linear regression model, B-Hg was related to the number of fish meals per week and to the number of occlusal amalgam fillings (multiple $r = 0.51$; $p < .001$). The levels of mercury, cadmium, and lead in whole blood were lower than suggested biological reference intervals, and did not indicate risks for adverse health effects.

(Compendium): Hospital Emergency Department Visits for Carbon Monoxide Poisoning Following an October 2006 Snowstorm in Western New York

Neil A. Muscatiello, MS
Gwen Babcock, MS
Rena Jones, MS
Edward Horn, PhD
Syni-An Hwang, PhD

Abstract

Following an October 2006 snowstorm that caused widespread power outages in western New York State, hospital emergency department (ED) visits for carbon monoxide (CO) poisoning increased. Overall, 264 people representing 155 households were diagnosed with CO poisoning during the power outages. Telephone interviews were conducted with a subset of these individuals. Respondents provided information about exposure sources, CO alarms, and awareness of CO warnings. In many households, portable generators were operated in an enclosed area. Awareness of CO warnings may have contributed to knowledge about locating portable generators outside. When operated outside, however, portable generators were generally located too close to the home. Gas

kitchen ranges were used for heat by numerous households. In the short term, CO education and improved clarity of CO warning information is important for increasing awareness about power outage–related CO risks. Improvements in the combustion efficiency of portable generators should be a long-term goal.

March 2010

General Public Health Considerations for Responding to Animal Hoarding Cases

Louisa Castrodale, DVM, MPH
Yvonne M. Bellay, DVM, MS
Catherine M. Brown, DVM, MSc, MPH
Fredric L. Cantor, DVM, MPH
John D. Gibbins, DVM, MPH
Marcia L. Headrick, DVM, MPH
Mira J. Leslie, DVM, MPH
Kathleen MacMahon, DVM, MS
Jeanette M. O’Quin, DVM
Gary J. Patronek, MS, VMD, PhD
Rodrigo A. Silva, MVZ, MPH
James C. Wright, DVM, PhD
Diana T. Yu, MD, MSPH

Abstract

Animal hoarding is an under-recognized problem that exists in most communities and adversely impacts the health, welfare, and safety of humans, animals, and the environment. These guidelines address public health and worker safety concerns in handling situations where animal hoarding or other dense concentrations of animals have caused unhealthy and unsafe conditions. Because animal hoarding situations are often complex, a full response is likely to be prolonged and require a cross-jurisdictional multiagency effort. Each animal hoarding case has unique circumstances related to the types and numbers of animals involved, the physical structure(s) where they are being kept, and the health status of the animals, among other factors that must be taken into account in planning a response. Some general public health considerations and associated recommendations for personal protective equipment use are presented that apply to all cases, however.

Analyses of the eFORS (Electronic Foodborne Outbreak Reporting System) Surveillance Data (2000–2004) in School Settings

Margaret Venuto, MA, MPH
Brenda Halbrook, MS, RD
Marion Hinnens, MS

Audrina Lange
Stephanie Mickelson, MHS

Abstract

Frequently cited statistics indicate that the burden of foodborne disease is a serious public health problem, particularly for vulnerable populations such as children. The purpose of the descriptive retrospective study discussed in this article was to analyze data collected within the Electronic Foodborne Outbreak Reporting System (eFORS) in school settings in order to examine the magnitude of foodborne disease etiologies and to recommend strategies for prevention. Data on foodborne outbreaks ($N = 96$) and illnesses ($N = 6,567$) were extracted and analyzed from the Centers for Disease Control and Prevention's (CDC's) eFORS spanning the years 2000 to 2004.

The National Exposure Registry: History and Lessons Learned

Myron G. Schultz, MD, FACP
James H. Sapp II, MS
Caroline D. Cusack, MSPH
Jennifer M. Fink, MPH, CHES

Abstract

The National Exposure Registry (NER) was created as a comprehensive group of data repositories that sought, over time, to relate specific environmental exposures to dioxin, trichloroethylene (TCE), benzene, and trichloroethane (TCA) to registrants' health conditions. Some parts of the NER were well conceived, whereas others were not. The most important design deficiency of the NER was its inability to adequately assess exposure. This was the key missing element and the Achilles heel of the NER program. At least three other important issues were never satisfactorily resolved in the design of the NER. They were unverified self-reporting, appropriate control groups, and the use of biomarkers. The many health effects that were observed to be in excess when compared with national norms might be explained by methodological differences in data analysis and reliance on self-reported nonverified data. Creating and maintaining a population-based chemical exposure registry is a more difficult challenge than creating and maintaining an outcome registry, such as a cancer registry.

April 2010

The Investigation of Noise Attenuation by Plants and the Corresponding Noise-Reducing Spectrum

Yang Fan
Bao Zhiyi, PhD
Zhu Zhujun, PhD

Liu Jiani, MSc

Abstract

As noise pollution is becoming more and more serious, many researchers are studying the noise attenuation effect provided by plants. This article examines six kinds of evergreens as research subjects so as to compare the different arrangements and densities of plants and their effect on noise attenuation. The authors studied the relationship between each of the plant's characteristics (the characteristics includes leaf area, leaf fresh weight, leaf tacity, and leaf shape) and their average relative noise attenuation ($\overline{\Delta L_{Aep}}$). The authors then generated the noise-reducing spectrum of the six plants. The results show that there is a notable difference in noise-reducing effects for low frequency and high frequency ($p < .05$) when the plants are arranged differently. Also, every plant demonstrates a specific noise-reducing spectrum. By quantifying noise attenuation characteristics and abilities of plants, the authors combine noise attenuation species to achieve the mutual benefits of plant varieties and establish an ecotypic sound barrier model with effective density and arrangement.

Assessing Food Safety Training Needs of Environmental Health Specialists in the U.S.: Focus Group Summary

Brian Nummer, PhD
Angela Fraser, PhD
John Marcy, PhD
Ron Klein

Abstract

As part of a U.S. Department of Agriculture Cooperative State Research, Education, and Extension Service grant, six focus group sessions on the topic of food safety education and training were held June 24, 2008, at NEHA's Annual Educational Conference & Exhibition in Tucson, Arizona. A total of 30 participants attended one of the six 50-minute sessions. Participants were NEHA conference attendees and nearly all stated they had a food safety training and education role in their job. A series of questions related to food safety at retail and food service levels was asked. This report summarizes some of the opinions provided by focus group participants.

Surveying the Food Safety Training Needs of Environmental Health Specialists in the U.S.

Angela M. Fraser, PhD
Brian A. Nummer, PhD

Abstract

The ultimate responsibility to produce and process safe foods at the retail level lies with the operator. The high percentage of establishments found to be out of compliance with food safety standards, however, suggests that the retail food service industry needs help. Many regulators offer help in the form of food safety training and

education. An online survey of food safety education and training needs was answered by 346 environmental health professionals. Survey participants felt that effective and relevant food safety training for food workers and managers requires both adequate resources and effective delivery. With limits on time, resources, and funding, regulators may themselves need help to provide education and training.

Issues and Framework of Environmental Health in Malaysia

Mazlin Bin Mokhtar, PhD
Md. Wahid Murad, PhD

Abstract

Environmental health problems in Malaysia are mostly attributed to atmospheric pollution, water pollution, climate change, ozone depletion, and solid waste management, as well as toxic, chemical, and hazardous waste management. The Ministry of Health, Malaysia, has been vigorously pursuing the environmental health agenda by collaborating with other agencies at district, state, national, and international levels. This article discusses the issues and management framework of environmental health in Malaysia. Some issues requiring further investigation in order to clearly understand the trade-off between atmospheric change and environmental health are suggested. These suggestions are developed with particular reference to appraisals concerned with the development and implementation of environmental policy, programs, and practice. Research on the relevant issues is discussed and a framework is built involving a comprehensive review of the literature and existing framework of Malaysian environmental health.

May 2010

Rapid Detection of Enterococci in Marine Beach Water by Immunomagnetic Capture and Bioluminescence and Its Comparison With Conventional Methods

Jiyoung Lee, MS, PhD
Rolf A. Deininger, MS, PhD

Abstract

A rapid method has been developed to determine enterococci using immunomagnetic separation and bioluminescence. Small paramagnetic beads are coated with antibodies having a specific affinity to enterococci. The captured enterococci are quantified by bioluminescence. The entire procedure takes 30 minutes without a pre-enrichment step. After developing the method, field tests were performed in California. Eight beach samples were provided for determining enterococci using the rapid method. At the same time, the same samples were tested with traditional methods performed by 26 local laboratories. The results show a significant agreement between the two methods.

In six out of the eight locations, the predictions based upon the rapid method agreed well with the average values by the traditional methods in determining the quality of swimmable water. Among these, the four predictions were very close to the average colony count. The results also showed the sensitivity of the rapid method (<104 CFUs/100 ml).

Assessment of Qualifications Needed by Environmental Health Graduates Entering Private-Sector Employment

Alice L. Anderson, MS, PhD
William Eric Ferrell, MSEH

Abstract

The goal of the study described here was to provide a snapshot of knowledge, skills, and abilities currently required by employers in the private sector of the environmental health and safety field, specifically for entry-level positions attainable by individuals recently earning a bachelor's degree in environmental health. Information was collected first through the screening of 115 entry-level job descriptions posted on a popular environmental health and safety Internet job-seeking site. Because of the predominance of industrial hygiene and safety job descriptions found, a second data source was created—an online opinion survey taken by 98 American Industrial Hygiene Association-registered consultants certified in industrial hygiene. Important results from both data sources indicated that employers preferred a four-year science degree for new hires.

Healthy Housing and Farm Life “Across the Pond”: My Sabbatical Experience

M.L. Tanner, HHS

Abstract

Environmental health practitioners, with the proper training and opportunity, can provide information and guidance for a number of healthy housing issues. In South Carolina, environmental health practitioners enter private homes for a limited number of reasons, usually for a lead-based paint issue. Environmental health practitioners in England visit private homes on a much more frequent basis, and consider a wider range of hazards during a visit. The Housing Health and Safety Rating System (HHSRS) used in England looks at 29 possible hazards during a physical survey of the home. As a credentialed Healthy Homes Specialist and a U.S. Environmental Protection Agency (U.S. EPA) certified lead risk assessor, the author wanted to learn more about the HHSRS. The NEHA Sabbatical Exchange Ambassador Award made it possible for her to spend most of the month of March 2009 in England, working with environmental health officers (EHOs) from several areas of the country. In addition to healthy housing, the author also learned about the British scheme for training EHOs. One of the most moving aspects of the author's sabbatical experience was the opportunity to meet and talk with farmers who had been affected by the 2001 and 2007 outbreaks of foot and mouth disease (FMD).

June 2010

An In-Home Video Study and Questionnaire Survey of Food Preparation, Kitchen Sanitation, and Hand Washing Practices

Elizabeth Scott, PhD
Nancie Herbold, RD, EdD

Abstract

Foodborne illnesses pose a problem to all individuals but are especially significant for infants, the elderly, and individuals with compromised immune systems. Personal hygiene is recognized as the number-one way people can lower their risk. The majority of meals in the U.S. are eaten at home. Little is known, however, about the actual application of personal hygiene and sanitation behaviors in the home.

The study discussed in this article assessed knowledge of hygiene practices compared to observed behaviors and determined whether knowledge equated to practice. It was a descriptive study involving a convenience sample of 30 households. Subjects were recruited from the Boston area and a researcher and/or a research assistant traveled to the homes of study participants to videotape a standard food preparation procedure preceded by floor mopping.

The results highlight the differences between individuals' reported beliefs and actual practice. This information can aid food safety and other health professionals in targeting food safety education so that consumers understand their own critical role in decreasing their risk for foodborne illness.

Mercury Contamination in Turtles and Implications for Human Health

Aaliyah D. Green, MS
Kurt A. Buhlmann, MS, PhD
Cris Hagen
Christopher Romanek, MS, PhD
J. Whitfield Gibbons, MS, PhD

Abstract

Mercury contamination threatens many ecosystems worldwide. Methylmercury bioaccumulates at each trophic level, and biomagnifies within individuals over time. Long-lived turtles often occupy high trophic positions and are likely to accumulate mercury in contaminated habitats. Millions of turtles worldwide are sold in Asia for human consumption, and consumers may be at risk if turtles contain high levels of mercury. The authors dissected 71 turtles from 14 food trade species and analyzed their tissues (liver, kidneys, muscle, claws, and scutes) for total mercury content. Mercury was generally highest in carnivores, and lowest in herbivores. Liver and scutes had the highest

concentrations. The authors compared mercury concentrations with consumption limits developed by the U.S. Environmental Protection Agency and Food and Drug Administration to evaluate mercury in fish tissue. Several samples exceeded the recommended 1,900 parts per billion (ppb) consumption threshold, indicating that consumers who eat certain turtle species frequently may be at risk for mercury-related health problems.

The Challenges of Sustainable Access to Safe Drinking Water in Rural Areas of Developing Countries: Case of Zawtar El-Charkieh, Southern Lebanon

May A. Massoud, PhD, DIC, MS
Abdolmonim Al-Abady, MD
Mey Jurdi, PhD
Iman Nuwayhid, MD, DrPH

Abstract

Adequate and safe water is important for human health and well-being, economic production, and sustainable development. Failure to ensure the safety of drinking water may expose the community to the risk of outbreaks of waterborne and infectious diseases. Although drinking water is a basic human right, many people do not have access to safe and adequate drinking water or proper sanitation facilities. The authors conducted a study to assess the quantity, cost, continuity, coverage, and quality of drinking water in the village of Zawtar El-Charkieh, Lebanon. Their aim was to identify the challenges of sustainable access to safe drinking water in order to determine the short-term management actions and long-term strategies to improve water quality. Results revealed that contamination of the source, absence of any disinfection method or insufficient dose, poor maintenance operations, and aging of the networks are significant factors contributing to water contamination during the storage and distribution process. Establishing a comprehensive drinking water system that integrates water supply, quality, and management as well as associated educational programs in order to ensure the safety and sustainability of drinking water supplies is essential.

July/August 2010

The Kansas City, Missouri, Ground-Level Ozone (GLO) Project: A Community-Based Air Pollution Field Experiment

Jimmy O. Adegoke
Joan F. Steurer
Christopher M. Green
M. Tyler Willoughby
James Joerke

Abstract

Tropospheric ozone concentrations for Kansas City are well known on a regional scale. The Kansas City, Missouri, ground-level ozone (GLO) project measured outdoor ozone concentrations using passive sensing devices (PSDs) on a neighborhood scale. Highly resolved exposure maps were made based on the detailed air quality observations collected during the seven week sampling study during the summer of 2005. Data analysis demonstrated that ozone concentration levels were higher in urban core neighborhoods compared to the surrounding suburban areas. The results have negative implications for the respiratory health of residents of urban Kansas City.

Reduced PM_{2.5} in Trujillo, Peru, on *El Dia Sin Autos* (“The Day Without Cars”)

Brandon E. Cassidy, MS
Manuel Aguilar-Villalobos, MS
P. Barry Ryan, PhD
Luke P. Naeher, PhD

Abstract

Street-level and rooftop (three-story building) concentrations of particulate matter $\leq 2.5 \mu\text{m}$ in diameter (PM_{2.5}) were measured in downtown Trujillo, Peru, in July and August 2003 to determine the PM_{2.5} concentration reduction on days with normal traffic conditions (32 days) versus a day when motor vehicles were temporarily banned from the downtown district (8:00 a.m. to 6:00 p.m., July 15) known as *El Dia Sin Autos* (“The Day Without Cars”). The mean 8:00 a.m. to 6:00 p.m. street-level PM_{2.5} concentration during the motor vehicle ban ($21.4 \mu\text{g}/\text{m}^3$; one day) was 49% lower than when vehicles were not impeded ($42.2 \pm 7.8 \mu\text{g}/\text{m}^3$ —mean ± 1 standard deviation; 20 days). The rooftop monitoring station indicated a 20% decrease in PM_{2.5} concentrations ($24.8 \pm 2.6 \mu\text{g}/\text{m}^3$ vs. $19.9 \pm 6.0 \mu\text{g}/\text{m}^3$) when motor vehicles were not present within historic downtown Trujillo. Temperature, relative humidity, and wind speed during the motor vehicle ban and during normal traffic were not significantly different ($p > .05$).

Does Cosmic Weather Affect Infant Mortality Rate?

Lior Shamir, PhD

Abstract

In this article, the author proposes to consider a link between infant mortality rate (IMR) and galactic cosmic radiation (CR) density. The periodical increase in solar activity increases the effect of the magnetic field of the sun, and therefore weakens galactic cosmic rays hitting the Earth’s surface. As a result, embryos in their early stages of development may be less exposed to high-energy ionizing cosmic rays when the solar activity peaks. In the study discussed here, cosmic ray density data were correlated with the U.S. infant mortality rate in the following year. Statistical analysis shows that in the past 30 years, Pearson correlation between the change in galactic CR flux and IMR decrease in the following year was ~ 0.36 ($p < .05$).

September 2010

Using the Electronic Foodborne Outbreak Reporting System (eFORS) to Improve Foodborne Outbreak Surveillance, Investigations, and Program Evaluation

John P. Middaugh, MD
Roberta M. Hammond, PhD, RS
Leah Eisenstein, MPH
Rebecca Lazensky, MPH

Abstract

Challenges exist in comparing foodborne disease outbreaks (FBDOs) across states due to important differences in reporting practices and investigations. Variables such as FBDO size, population size, number of tourists, and suspected etiology are important to consider when interpreting FBDO data. Analysis of eFORS data can be valuable in improving state FBDO investigations. From 2000 to 2005, Florida reported a greater proportion of FBDOs, with two cases per outbreak, than the U.S. as a whole (40.4% in Florida vs. 17.2% in the U.S.). Reporting a higher rate of small FBDOs provided more opportunities for public health interventions but contributed to a lower agent confirmation rate (17.0% in Florida vs. 42.2% in the U.S.). While the Electronic Foodborne Outbreak Reporting System's (eFORS) database brought great improvements in national FBDO surveillance, as with any complex surveillance system, considerable knowledge and specialized expertise is required to properly analyze and interpret the data, especially because there is a large variation in state reports to eFORS.

Medical Surveillance of Search Dogs Deployed to the World Trade Center and Pentagon: 2001–2006

Cynthia M. Otto, DVM, PhD
Amanda B. Downend
George E. Moore, DVM, PhD
Joanne K. Daggy
D. Lauren Ranivand, MPH
Jennifer A. Reetz, DVM
Scott D. Fitzgerald, DVM, PhD

Abstract

In response to the terrorist attacks of September 11, 2001, at the World Trade Center and Pentagon, almost 50,000 rescue workers and approximately 300 search and rescue dogs participated in rescue and recovery operations. The dogs were exposed to the same hazards as the human workers, but did not have any of the personal protective gear. This prospective double cohort observational study compared annual medical history,

blood biochemical and hematologic results, and thoracic radiographic findings in 95 search and rescue dogs that responded to the terrorist attacks at the World Trade Center or the Pentagon on September 11, 2001, to a control group of 55 search and rescue dogs that were not involved in the 9/11 response. Compared to controls, the deployed search dogs demonstrated mild changes in blood work and a higher incidence of radiographic cardiac abnormalities. Species differences may explain the lack of pulmonary findings in the dogs. These dogs may provide early evidence of nonpulmonary complications of the 9/11 response. Continued surveillance of all responders is warranted.

The Bacteriological Analysis and Health Risks in the Urban Estuary of St. George's Bay, Grenada, West Indies

Rakesh H. Patel, MD, MSc
Karsten Pedersen, PhD
Svetlana Kotelnikova, PhD

Abstract

The dilution rates of indicators *Enterococcus faecalis* and *E. coli* were studied from the St. John's River estuary in Grenada, West Indies. Health risk zones were established based on the levels of bacteriological pollution. In accordance with the World Health Organization (WHO) health risk guidelines, risks were in the range of <1% gastrointestinal (GI); <0.3% acute febrile respiratory illness (AFRI) to a 1%–5% GI; and 0.9%–1.9% AFRI within 100 m from the St. John's River outflow site in St. George's Bay. These values were the result of river water dilution, where the most probable number (MPN) levels for both indicator organisms from the river were equivalent to that of raw sewage with an AFRI health risk of >3.9% and a GI risk of >10%. The distance intervals farther than 100 m showed fluctuating values and corresponding health risks. *E. faecalis* and *E. coli* strains isolated were resistant to 35.7% and 42.9% of the antibiotics tested, respectively.

October 2010

To Breastfeed or Not To Breastfeed: A Review of the Impact of Lactational Exposure to Polychlorinated Biphenyls (PCBs) on Infants

Muktar H. Aliyu, MD, DrPH
Amina P. Alio, PhD
Hamisu M. Salihu, MD, PhD

Abstract

Researchers have long debated the adverse effects of exposure to polychlorinated biphenyls (PCBs) on children versus the benefits of breastfeeding. In this article, the authors provide an overview of the known health effects of PCBs in children and

examine the level of evidence regarding the risk of postnatal exposure via breastfeeding. The major source of PCBs is environmental, with over 90% of human exposure through the food chain. PCB exposure in infants is predominantly via breast milk, but limited evidence exists of significant toxicity associated with this mode of transmission. Breastfeeding should, therefore, continue to be encouraged on the basis of evidence of the benefits derived from human milk coupled with inconclusive proof that lactational PCB exposure has major detrimental effects on the overall health and development of infants.

Effectiveness, Suitability, and Performance Testing of the SKC® Deployable Particulate Sampler (DPS) As Compared to the Currently Deployed Airmetrics™ MiniVol™ Portable Air Sampler

Steven L. Patterson, MSPH, RS/REHS

Jennifer A. Rusiecki, PhD

Steven L. Barnes, MD, MPH

Jack M. Heller, PhD

Joseph B. Sutphin

Timothy A. Kluchinsky, Jr., DrPH, MSPH, MBS, RS/REHS-E

Abstract

Epidemiological studies have linked particulate matter (PM) exposure to morbidity and mortality from cardiovascular and respiratory disease. In order to monitor and assess the potential PM health risk to deployed military personnel, the U.S. Army must field a portable sampler that can accurately sample particles with an aerodynamic diameter less than or equal to a nominal 2.5 μm (PM_{2.5}). In the study described in this article, the SKC® Deployable Particulate Sampler (DPS) was compared to the currently deployed Airmetrics™ MiniVol™ portable air sampler in the hot, dry environment of Yuma Proving Grounds, Arizona, and the cold, wet environment of Fort Drum, New York. For all measurements taken and averaged, the DPS and the MiniVol did not differ significantly for mean concentration collected; however, the DPS collected 4.0 times more mass than the MiniVol ($p < .05$). The DPS was shown to be an improvement over the MiniVol when evaluated for measures of effectiveness, suitability, and performance.

Common Regulatory Practices in Onsite Wastewater Programs: A Willing Suspension of Disbelief

Anthony Smithson, MS, RS

The phrase “a willing suspension of disbelief,” coined by Samuel Taylor Coleridge in his *Biographia Literaria* published in 1817, refers to the willingness of a person to accept as true the premises of a work of fiction, even if those premises are fantastic or impossible. Prescriptive codes regulating onsite wastewater often carry forward the relics of previous generations even as new research, new ideas, and new technology provide infinite possibilities to better protect health, environment, and development interests. While gaps remaining in our knowledge are sufficient to warrant a

conservative approach, some commonly imposed standards simply cannot be justified in a context of relative risk. The simplest example—common in almost all codes and discussed here—has profound consequences for property owners, goes essentially unaccounted for in any cumulative fashion, and requires a suspension of disbelief to defend.

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Nonhygienic Behavior, Knowledge, and Attitudes Among Interactive Splash Park Visitors

Randall J. Nett, MD, MPH
Robin Toblin, PhD, MPH
Annora Sheehan, DVM
Wan-Ting Huang, MD
Andrew Baughman, PhD, MPH
Kris Carter, DVM, MPVM

Abstract

Nonhygienic behavior likely contributed to three recreational waterborne illness (RWI) outbreaks at Idaho splash parks. The study described in this article examined the influence of signage and hygiene attendant presence on rates of nonhygienic behavior among children at splash parks and knowledge and attitudes of their adult supervisors. Investigators observed children for nonhygienic behaviors at four Idaho splash parks, two with signage and attendants. Supervisors were surveyed (N = 551) using an eight-item survey. Individually observed children (N = 145) were often seen exposing their buttocks to splash feature water and placing an open mouth to water. The rate of nonhygienic behaviors was not lower at parks with signage or staff. Supervisors reported bathing children before splash park entry infrequently. Signage and hygiene attendants do not adequately limit nonhygienic behaviors at splash parks, and supervisors have insufficient understanding of RWI. These findings have implications for developing splash park regulations and RWI prevention efforts.

Shigellosis From an Interactive Fountain: Implications for Regulation

June E. Bancroft, MPH
Stephen B. Keifer
William E. Keene, MPH, PhD

Abstract

In July 2003, the authors investigated an outbreak of *Shigella sonnei* infections in Marion County, Oregon. Nineteen confirmed and 37 presumptive cases, mostly young

children, were identified. A case-control study implicated play in an interactive fountain in a city park (matched odds ratio undefined; $p < .002$). The association was confirmed by a cohort study among local schoolchildren (RR [relative risk] = 12.6, $p < .001$) that allowed us to estimate that >500 persons became ill. Fountain design flaws and inadequate maintenance set the stage for the outbreak. In 2007, the authors surveyed state health departments to assess rules and regulations governing interactive fountains. Thirty of 48 states responding (62%) reported public health regulation of fountains; standards and enforcement capacity varied. Regulation is a relatively new phenomenon; only 13 states (27%) had rules before 2000. A lack of enforceable design and maintenance standards increases the risk of enteric disease transmission at these increasingly popular venues.

Detection of Airborne Viruses in a Pediatrics Department Measured Using Real-Time qPCR Coupled to an Air-Sampling Filter Method

Chun-Chieh Tseng, PhD
Luan-Yin Chang, MD, PhD
Chih-Shan Li, PhD

Abstract

Children are vulnerable to viral infections. The study discussed in this article investigates the possibility of aerosol transmission of viruses in children under age 18 in the pediatrics department of a medical center in Taipei, Taiwan. After first using the filtration method to collect viral aerosols, the authors combined it with real-time quantitative polymerase chain reaction (qPCR) to detect influenza A virus (INFAV), human adenovirus (HAdV), and enterovirus. Of 33 aerosol samples collected from the emergency room of the pediatrics department, 8 (24%) were positive for INFAV, 12 (36%) for HAdV, and 5 (15%) for enterovirus. HAdV was detected from the aerosol of 26 samples, but INFAV and enteroviruses were not. The filter and real-time qPCR can be used to detect and quantify the viral load in aerosols, in which enteroviruses had the highest viral titer. In summary, a well-established filter/real-time qPCR assay was successfully applied to measure viral aerosols in the occupational environment. Environmental monitoring of airborne viruses could provide an early indicator of dangerous viruses in the air of hospitals.

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A Potential New Health Risk From Lead in Used Consumer Products Purchased in the United States

Laurel Sharmer, MPH, PhD, CHES
M. Steven Shackley, PhD
Anna K. Harding, PhD

Abstract

The Lead Renovation, Repair, and Painting Rule and the *Consumer Product Safety Improvement Act*, both enacted in 2008, were intended to protect children from exposure to lead by setting federal limits on lead content. Neither of these federal actions, however, addresses a newly recognized pathway of exposure to lead from the use of used consumer products in the home. In the study described in this article, the authors purchased 28 used consumer items in the United States in 2004 and analyzed them for lead content using X-ray fluorescence technology. Nineteen of the items exceeded the federal standards for lead. The amount of lead in the items ranged from 745 parts per million (ppm) to 428,525 ppm. The authors' research shows that such items, which are easily purchased throughout the U.S., may contain surface lead concentrations in amounts greater than 700 times current federal limits. This article reveals an ongoing public health threat involved in exposure to lead that is not addressed by current laws or regulations. Addressing the risk involved in this threat requires continued research, public education, and targeted regulatory action.

A Synopsis of 30 Years of Major Accomplishments by the Pennsylvania Department of Health in Environmental Health (Part 1 of 2): The 1980s

James N. Logue, DrPH
Kandiah Sivarajah, PhD, DABFM

Abstract

This article reviews significant environmental health projects conducted by the Pennsylvania Department of Health, particularly the Division of Environmental Health, during the 1980s. The authors describe lessons learned from dealing with health concerns related to the Vietnam War, Three Mile Island, hazardous waste sites, and radon, as well as emerging issues during that decade.

A Synopsis of 30 Years of Major Accomplishments by the Pennsylvania Department of Health in Environmental Health (Part 2 of 2): The 1990s and the 21st Century

James N. Logue, DrPH
Kandiah Sivarajah, PhD, DABFM

Abstract

This article reviews significant environmental health projects conducted by the Pennsylvania Department of Health, particularly the Division of Environmental Health, during the 1990s and the following decade. The authors describe lessons learned from a new occupational health initiative, continuing work on the health assessment grant funded by the Agency for Toxic Substances and Disease Registry, and a new Environmental Public Health Tracking grant funded by the Centers for Disease Control and Prevention, in addition to emerging issues during these two decades.