JOURNAL OF

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Airbnb is the world's leading platform for peer-to-peer (P2P) short-term housing rentals. Airbnbs are typically used as an alternative to a stay in a hotel or other traditional hospitality offerings. This month's cover article, "Assessing Potential Public Health Concerns in Airbnb Venues in Four Canadian Cities," examined the prevalence of important amenities relevant to public health such as smoke alarms, carbon monoxide detectors, fire extinguishers, and first aid kits, as well as if smoking is allowed and if breakfast is served. The article found that many Airbnb venues in Canada have conditions that could pose a health risk to guests. These results highlight the need for government agencies to take into account public health concerns when regulating the P2P housing marketplace.

See page 8.

ADVANCEMENT OF THE SCIENCE

ADVANCEMENT OF THE PRACTICE

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YOUR ASSOCIATION

PRESIDENT'S MESSAGE

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Sandra Long, REHS, RS

he struggle between science and politics is not new. The two have historically faced off numerous times for various reasons. As environmental health professionals, we look to science to guide our professional decisions. At times, those of us who use science as a basis for our work can feel under attack by politicians who deny the science (e.g., climate change is not real) and refuse the advice or information provided by educated and reputable scientists. The goal of science is to search for more information to better understand the world around us and how we interact with it.

We have recently seen that researchers, environmental scientists, and public health professionals have provided guidance and information on methods concerning COVID-19 prevention and reduction of its spread. The application of the advice fell to the political systirmation ly f ofevention oortryTh s tablween scie0 -.02l it(es)-15vention fJ 0khodstogTw tio toflecee (sit-ly ve,)-15vention fa peit rfow was

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The NEHA Endowment Foundation was established to enable NEHA to do more for the environmental health profession than its annual budget might allow. Special projects and programs supported by the foundation will be carried out for the sole purpose of advancing the profession and its practitioners.

Individuals who have contributed to the foundation are listed below by club category. These listings are based on what people have actually donated to the foundation—not what they have pledged. Names will be published under the appropriate category for 1 year; additional contributions will move individuals to a different category in the following year(s). For each of the categories, there are a number of ways NEHA recognizes and thanks contributors to the foundation. If you are interested in contributing to the Endowment Foundation, please call NEHA at (303) 756-9090. You can also donate online at www.neha.org/about-neha/donate.

Thank you.

INTERNATIONAL PERSPECTIVES

The peer-to-peer (P2P) marketplace allows people to sell goods and services to others through connections facilitated by Web or smartphone application platforms. Airbnb has emerged as the global leader for P2P short-term property rentals (Jefferson-Jones, 2016). Short-term accommodations brokered through Airbnb typically are used as an alternative to a stay in a hotel or other traditional hospitality offerings. In Canada, it is estimated that there are more than 100,000 Airbnb listings generating $500 million in revenue for approximately 70,000 hosts (Grynol, 2017). Guests can choose from a variety of housing types listed on Airbnb including 1) a shared room, where guests could stay in a space with other people (akin to a hostel); 2) a private room, where guests would stay with a host or hosts in the same building or unit; or 3) an entire property, where guests would not share any spaces with the hosts.

Researchers have highlighted the impact Airbnb has had on housing costs and availability in several Canadian cities (Wachsmuth, Kerrigan, Chaney, & Shillolo, 2017). Some regions in Canada have created regulations with an effort to collect lost tax revenue that would have been collected had guests stayed in hotels ("Quebec reaches 'landmark' deal," 2017). Quebec law requires Airbnb hosts to obtain a permit from Quebec Tourism and hosts are expected to abide by housing regulations such as zoning rules (Government of Quebec, 2020a). Other policy approaches at municipal levels, such as in Montreal ("City moves to restrict Airbnb," 2018) and Toronto (City of Toronto, 2020), have been developed to combat the high concentrations of P2P listings in neighborhoods that impact housing access and affordability. Housing is widely acknowledged as a key social determinant of health.

The P2P short-term housing sector has raised other public health concerns, including guest exposure to tobacco smoke. One study examined whether smoking was allowed in Airbnb venues and found that it differed greatly across Canada, noting a relatively high proportion of smoking allowed in properties in Montreal (Kennedy, Douglas, Stehouwer, & Dawson, 2018). Other public health concerns in Airbnb venues include a

more than 120,000 venues found that one fifth of Airbnbs did not have smoke alarms (20%), only approximately one half had carbon monoxide detectors (58%), and less than one half reported the presence of a first aid kit (36%) or a fire extinguisher (42%) (Kennedy, Jones, & Gielen, 2019).

Additionally, there are potential public health concerns from meals prepared by Airbnb hosts for their paying guests. As the name suggests, many Airbnb venues offer breakfast. The Airbnb Help Center reminds hosts that different countries, states, and cities have different licensing requirements and rules related to providing food for guests (Airbnb Help Center, 2020a). Hotels, bed

INTERNATIONAL PERSPECTIVES

In recent decades, cities in China are experiencing rapid development and extensive social and economic structure changes. Although the industrial sector plays an important role in economic development, suburban agriculture is an essential part of the urban economy, especially in developing countries. Farming activities in suburban areas of cities can not only supply food to urban residents but also provide farmers with additional opportunities for employment, income, and subsistence food (Lynch, Binns, & Olofin, 2001; Nguni & Mwila, 2007). Additionally, vegetable production is a key sector of the regional agricultural economy (Midmore & Jansen, 2003).

With the development of modern agriculture and industry in cities, however, large amounts of waste are released into agricultural soils. Chemical fertilizers and sewage also threaten the quality and safety of suburban vegetable products (Huang et al., 2006). Heavy metals create critical problems because of their toxicity and nonbiodegradability in the environment (Adriano, 2001); thus, the harm of heavy metal pollution on the soil environment and human health has become a global hot topic (Abdu, Abdulkadir, Agbenin, & Buerkert, 2011; Gil, Boluda, & Ramos, 2004; Lee, Li, Shi, Cheung, & Thornton, 2006; Shao et al., 2014; Song, Hu, An, Chen, & Li, 2018). Heavy metals can be transferred readily from the soil matrix to soil–crop systems, leach into groundwater, and eventually accumulate in human bodies via the food chain (Facchinelli, Sacchi, & Mallen, 2001). Heavy metal pollution in soil can also harm plant growth and development, crop yields and qualities, and affect the growth of soil microorganisms (Giller, Witter, & McGrath, 1998; Müller & Anke, 1994). Furthermore, heavy metals can enter human bodies and endanger human

tilizers (primarily phosphate fertilizers), animal manure, industrial or municipal wastewater, sewage sludge, and some types of compost (Singh, Mohan, Sinha, & Dalwani, 2004). The accumulation of heavy metals in agricultural soils could be significantly affected by different cultivation patterns (Liu et al., 2011; Wang et al., 2015), but the heavy metal pollution of vegetable soils in a suburban area under different agricultural activities has not garnered much attention, especially for industrial cities.

The purposes of our study were to

1. determine the concentrations of heavy metals Pb, chromium (Cr), copper (Cu), nickel (Ni), zinc (Zn), Cd, and arsenic (As) in suburban vegetable soils in Jilin City under different cultivation patterns;
2. assess the heavy metal pollution; and
3. examine the noncarcinogenic and carcinogenic health risks to children and adults from these heavy metals in open fields and in greenhouse soils in suburban areas.

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The study area was located in Jilin City (42°31'~44°40' N, 125°40'~127°56' E), the second largest city in northeastern China, with an area of 27,000 km^2 and a population

alkaline (5.86–7.79), without obvious soil acidification, and was similar between greenhouse soils and open field soils. In general, agricultural soil acidulation in topsoil was evident with the intensive farming, which could be caused by numerous processes such as nitrification, oxidation of organic sulfur, oxidation of iron or manganese, and anaerobic decomposition of organic substances, to name a few. Additionally, a number of factors could increase the soil pH, such as ammonification of urea (Watson, Stevens, Garrett, & McMurray, 1990), application of alkaline fertilizers such as ammonium bicarbonate, nitrate uptake and assimilation by plants (Gijsman, 1990), and decarboxylation of organic anions applied with manure or plant residues (Yan & Schubert, 2000; Yan, Schubert, & Mengel, 1996). The high organic content could also be an important factor to avoid the acceleration of soil acidification. In our study, the soil samples from open fields and greenhouses both had a high content of organic matter (mean of 32.30 and 34.19 g/kg, respectively), probably due to the addition of manure. The mean contents of organic matter, TN, and TP in greenhouse soils were higher than in open field soils due to more input of nutrients, but TK was slightly less in greenhouse soils than in open field soils, indicating that the amount of potassium fertilizer used in the greenhouse vegetable planting management process was relatively low.

Concentrations of Pb, Cr, Cu, Ni, Zn, Cd, and As in the suburban soils, together with soil background values, are presented in Table 2. The concentration ranges of heavy metals (in mg/kg) in the study area were 8.6–48.15 for Pb (mean = 30.84), 16.95–281.11 for Cr (mean = 65.65), 7.36–98.12 for Cu (mean = 26.41), 15.29–33.10 for Ni (mean = 23.078.12 fP6bfi

46.43–225.81 for Zn (mean = 135.14), 0.054–0.849 for Cd (mean = 0.143), and 5.25–17.70 for As (mean = 9.50). The mean values of the heavy metal concentrations can be arranged in descending order, with Zn being the highest value: Zn > Cr > Pb > Cu > Ni > As > Cd. Compared with their respective background values in Jilin City, all the metals we examined exhibited higher concentrations, especially Pb, Cr, Cu, Zn, and As. Based on the coefficient of variation (CV), the heavy metals we analyzed can be classified into two groups: 1) Ni, Zn, and As, with CV values <30% and 2) Pb, Cr, Cu, and Cd, with CV values >30%. It has been reported that CV values of heavy metals dominated by natural sources are relatively low, while CV values of heavy metals affected by anthropogenic sources are quite high (Yongming, Peixuan, Junji, & Posmentier, 2006). Accordingly, Pb, Cr, Cu, and Cd concentrations in suburban vegetable soils tend to be more markedly affected by anthropogenic activities, while Ni, Zn, and As concentrations were quite homogeneous across the suburban area of Jilin City, especially Ni, which might more often be associated with natural sources.

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The concentrations of heavy metals in suburban vegetable soils from open fields and greenhouses are

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SPECIAL REPORT

Contact with environmental sources of pathogens provides numerous avenues—directly and indirectly—for infection and illness. In the case of participants in outdoor athletic events, this risk is likely to fall initially on otherwise healthy young adults (i.e., populations not traditionally considered at risk). Therefore, this issue might stay off the radar of many healthcare professionals. The environmental health professional is well situated to synthesize across disciplines and take the lead on this underacknowledged infection risk.

In public health surveillance practices, at-risk populations for infectious disease in-

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An athlete's exposure to soil or mud (i.e., saturated and viscid soil) can create a pathway for infection by a number of pathogens (Table 1). One of the better publicized examples of an outdoor sporting event that led to an outbreak among participants is a 2008 mountain bike race in Wales where mud splashed into the mouths of some bikers; this action was ultimately linked to gastrointestinal illness (Griffiths et al., 2010). Nearly one half (161/347) of race participants who responded to an administered survey reported that they had acquired a gastrointestinal disease with symptoms such as fatigue, diarrhea, abdominal pain, fever, nausea, vomiting, and blood in stool, and 10 were laboratory confirmed with campylobacteriosis. The majority of these respondents were between the ages of 25 and 44 (i.e., young adults). Although not all cases were confirmed by microbiological assays, the conditions and symptoms match that of campylobacteriosis and infection likely was caused by exposure through soil either directly to the mouth or via the hands of race participants as they consumed contaminated liquids and/or food during the race.

was believed to have come from the feces of sheep that were reported to have roamed through the bike course prior to the race, the feces being mixed into mud due to heavy rains. When bikers were trailing one another, the lagging bikers had mud splashed into their face from the spinning wheels of the biker in front (Griffiths et al., 2010).

Another example of an outbreak linked to mud exposure is a 2012 mud race in Nevada, where participants traversed an obstacle course filled with mud, ultimately leading to 22 people experiencing gastrointestinal illness; 4 were laboratory confirmed for campylobacteriosis (Ziegler et al., 2014). It was noted that the participants were primarily active military, thereby implying that this population was generally healthy and young. Common-source outbreaks of campylobacteriosis have been previously attributed to animal feces (Ziegler et al., 2014) and it seems likely that feces were again the main source of bacterial contamination, as the race was held on a cattle ranch and participants reported seeing cattle and swine during the race. Due to a lack of formal policies targeting these types of issues, the event organizers were most likely unaware of the risk presented to the race participants, who were both fatigued and directly exposed to an environmental pathogen reservoir.

Furthermore, a 2013 mud race in Michigan was linked to an outbreak that led to the Michigan Department of Community Health receiving more than 200 reports of gastrointestinal symptoms in a span of 4 days after the race had concluded. The outbreak later was attributed to norovirus based on symptoms and duration of illness (Michigan Department of Health & Human Services, 2013). In 2015, at Mud Day in Levens, France, at least 1,000 out of approximately 8,200 participants became ill after participating in a mud race (Six, Giron, & Galey, 2016). This outbreak was also attributed to norovirus.

In 2015, a mud event was linked to an outbreak of skin rashes ascribed to . . in Chester County, Pennsylvania. Following physician notification to the Chester County Health Department (CCHD) of a rash on a participant in the mud event, CCHD sent a survey to known participants, who, in turn, peer-shared the survey with other participants. Of the 60 individuals who returned the survey, 51 reported participating in the event. Of those 51 participants, 22 reported a skin rash (4 reported seeing a physician about the rash), with 1 reporting a positive test for . . . Four soil samples were collected 3 days after the event ended. All soil samples tested negative for . . (J. Achenbach, personal communication, August 2016), although . . , a plant pathogen that can infect humans (Cruz, Cazacu, & Allen, 2007), has been isolated from surface waters in Pennsylvania (Gultekin & Huffman, 2008).

Another example of a mud-related out-

tal health risk is widely understood (Clayton et al., 2017; Graciaa et al., 2018). Sports such as snorkeling and SCUBA diving, in addition to triathlons and other water events, provide such contact risks. These popular sports can require participants to reuse mouthpieces, suits, and other equipment that previously have been used by others and need to be thoroughly cleaned and disinfected prior to use by others. Bacterial buildup potentially is present in parts of SCUBA diving equipment, potentially leading to elevated risk of bacterial transmission because not every piece in the equipment can be entirely disinfected. We are unaware of any reported infections due to this source and emphasize that this statement is not meant to imply that severe risks are currently known in the diving community, but to emphasize that risks of infection can be present in this context.

In addition to infection via contaminated

fectious episode itself, some symptoms of URTIs in exercisers are due to immune dysfunction itself in the setting of prolonged exercise. The cause of this immune depression has been linked to increases in circulating stress hormones such as adrenaline and cortisol, alterations in the pro- and anti-inflammatory cytokine balance, and increases in free radicals. In a separate study, Gleeson (2013) points out that prolonged bouts of intense exercise with limited recovery due to frequent training in conjunction with psychological stress and lack of sleep can combine to effect reduced immune function in athletes, placing them at increased risk for a plethora of infections.

Another risk factor related to immune dysregulation can be found in high altitude hiking or rock climbing, as reduced oxygen levels coupled with a harsh, pathogen-rich environment can lead to a high state of susceptibility to infection (Basnyat, Cumbo, & Edelman, 2009). As noted by studies of human immunity in high-altitude environments, these extreme environments can further contribute to immunosuppression and illness via a multitude of stressors such as increased UV radiation exposure, hypobaria, hypoxemia, intense weather conditions,

Vally, H., Whittle, A., Cameron, S., Dowse, G.K., & Watson, T. (2004). Outbreak of wound infections associated with mud football. , (8), 1084–1089.

Young, C.C., Niedfeldt, M.W., Gottschlich, L.M., Peterson, C.S., & Gammons, M.R. (2007). Infectious disease and the extreme sport athlete. , 26(3), 473–487.

Ziegler, M., Claar, C., Rice, D., Davis, J., Frazier, T., Turner, A., . . . Leaumont, C.F. (2014). Outbreak of campylobacteriosis associated with a long-distance obstacle adventure race—Nevada, October 2012.

DIRECT FROM CDC ENVIRONMENTAL HEALTH SERVICES

nvironmental health problems require data to be solved. As a result, public health professionals are, by nature, data explorers. Attempting to identify, measure, and respond to pressing environmental health problems requires reliable data that are accessible, understandable, timely, and actionable. Data do not, however, collect themselves. They must be collected and put into a useable format. The Centers for Disease Control and Prevention's (CDC) Environmental

staff of an unusually high number of calls to the poison center about carbon monoxide.

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Did You Know?

EH CALENDAR

UPCOMING NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION (NEHA) CONFERENCES

& Spokane, WA, www.neha.org/aec

NEHA AFFILIATE AND REGIONAL LISTINGS

Illinois Environmental Health Association, Utica, IL, http://ieha.coffeecup.com

Iowa Environmental Health Association, www.ieha.net

Michigan Environmental Health Association, Port Huron, MI, www.meha.net/AEC

Missouri Environmental Health Association, Springfield, MO, https://mehamo.org

North Carolina Public Health Association, https://ncpha.memberclicks.net

Texas Environmental Health Association, Austin, TX, www.myteha.org

Utah Environmental Health Association, Ogden, UT, www.ueha.org/events.html

TOPICAL LISTINGS

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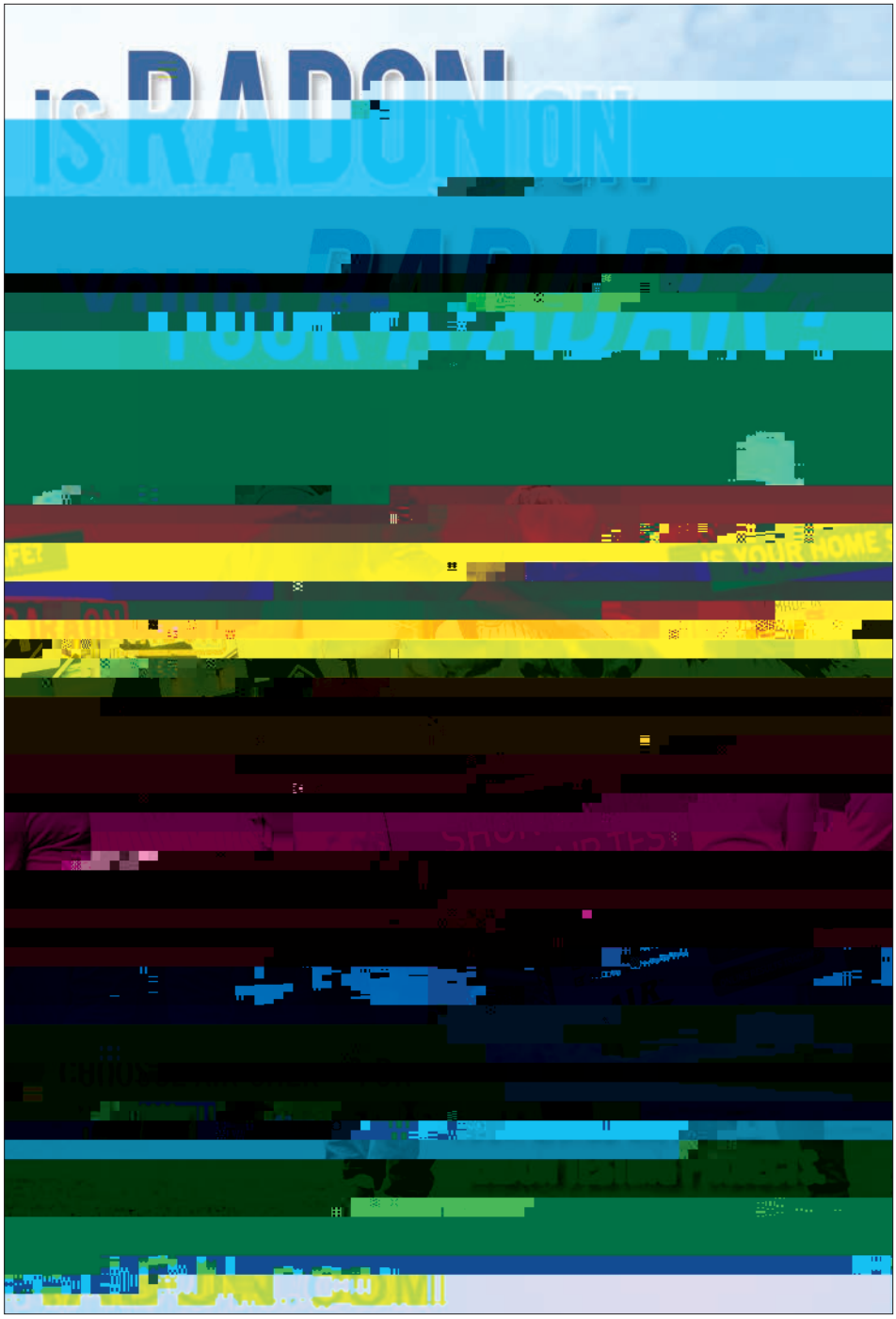

Did You Know?

NEHA's Government Affairs program provides members with insights on environmental health in various levels of government. The program tracks state and federal legislation, responds

JEH QUIZ

Assessing Potential Public Health Concerns in Airbnb Venues in Four Canadian Cities

Available to those with an active NEHA membership, *JEH* Quiz, offered six times per calendar year through the *Journal of Environmental Health,* is an easily accessible means to accumulate continuing education (CE) contact hours toward maintaining your NEHA credentials.

1. Read the featured article carefully.
2. Select the correct answer to each *JEH* Quiz question.
3. a) Complete the online quiz found at www.neha.org/publications/journal-environmental-health,
   b) Fax the quiz to (303) 691-9490, or
   c) Mail the completed quiz to *JEH* Quiz, NEHA 720 S. Colorado Blvd., Ste. 1000-N Denver, CO 80246.

   Be sure to include your name and member number!
4. One CE contact hour will be applied to your account with an effective date of October 1, 2020 (first day of issue).
5. Check your continuing education account online at www.neha.org.
6. You're on your way to earning CEs!

Quiz Registration

Name

NEHA Member Number

E-mail

Quiz deadline: January 1, 2021

1. In Canada, it is estimated that there are more than __ Airbnb listings.
   a. 70,000
   b. 80,000
   c. 90,000
   d. 100,000

2. Guests can choose from a variety of housing types listed on Airbnb including
   a. a shared room.
   b. a private room.
   c. an entire property.
   d. all the above.
   e. none of the above.

3. One study of 16 U.S. cities that included more than 120,000 venues found that __ of Airbnbs did not have smoke alarms.
   a. one fifth
   b. one fourth
   c. one third
   d. one half

4. This study assessed potential public health concerns in Airbnbs in four Canadian cities by
   a. examining the prevalence of important amenities related to public health such as smoke alarms, carbon monoxide detectors, fire extinguishers, and first aid kits.
   b. identifying the percentage of venues that describe in their house rules if smoking is allowed.
   c. determining the percentage of venues that reported offering breakfast for their guests.
   d. all the above.
   e. none of the above.

5. The study sample included __ venues within the four Canadian cities selected for this study.
   a. 6,702
   b. 15,722
   c. 31,535
   d. 100,000

6. The study sample included approximately __ of Airbnb venues in Canada.
   a. 20%
   b. 30%
   c. 40%
   d. 50%

7. Most Airbnb venues in the sample were classified as
   a. entire homes or entire properties.
   b. private rooms.
   c. shared rooms.

8. The reported presence of smoke alarms across the entire sample was
   a. 35.4%.
   b. 46.6%.
   c. 56.2%.
   d. 88.9%.

9. The reported presence of carbon monoxide detectors across the entire sample was
   a. 35.4%.
   b. 46.6%.
   c. 56.2%.
   d. 88.9%.

10. The reported presence of fire extinguishers across the entire sample was
    a. 35.4%.
    b. 46.6%.
    c. 56.2%.
    d. 88.9%.

11. The reported presence of first aid kits across the entire sample was
    a. 35.4%.
    b. 46.6%.
    c. 56.2%.
    d. 88.9%.

12. Across the entire sample, __ indicated that breakfast was served or included at the Airbnb venue.
    a. 9.2%
    b. 11.2%
    c. 13.3%
    d. 16.5%

JEH Quiz #6 Answers

May 2020

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SPECIAL LISTING

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This project recognized the need to adjust our systems and policies for older adult health for financial sustainability and to support aging with dignity. Residents from backgrounds of poverty typically lack adequate health literacy skills and support to manage their chronic conditions and their acute and long-term care needs. They also need access to on-site relationships marked by trust, caring, and accountability. By providing health assessments and consultations to older adult residents in real time and from where they live, vulnerable residents are supported to manage their chronic conditions and overall health.

The Asian Pacific Self-Development Residential Association is an association of Cambodian refugees that self-manages a

Benedict College, consisted of providing creative education and training to hundreds of mostly minority students. The students received electronic training on zoonotic diseases and environmental disasters. The innovative part of the project consisted of identifying motivated students. They extended their learning by researching specific zoonotic diseases, emerging pathogens, and environmental disasters, and then presented their findings through competitively evaluated research presentations.

Dr. Morris has served as the director of the Environmental Health Science Program at Benedict College in South Carolina since 1989. He has been a member of NEHA for 32 years. Dr. Morris served in the U.S. Army and has held leadership positions in several professional organizations. He retired from the Medical Service Corps of the U.S. Army Reserves with the rank of lieutenant colonel.

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NEHA and AAS partner to offer scholarships to deserving environmental health students. The purpose of the scholarship program is to encourage students to commit to a career in environmental health and to inspire past and present graduates to pursue postgraduate studies in environmental health sciences. Every year one graduate student is awarded $2,500 and two undergraduate students are awarded $2,250.

Certificates of Merit are awarded to affiliate members and teams who have made

NEHA NEWS

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As part of tradition, the National Environmental Health Association (NEHA) features new staff members in the . . around the time of their 1-year anniversary. These profiles give you an opportunity to get to know the NEHA staff better and to learn more

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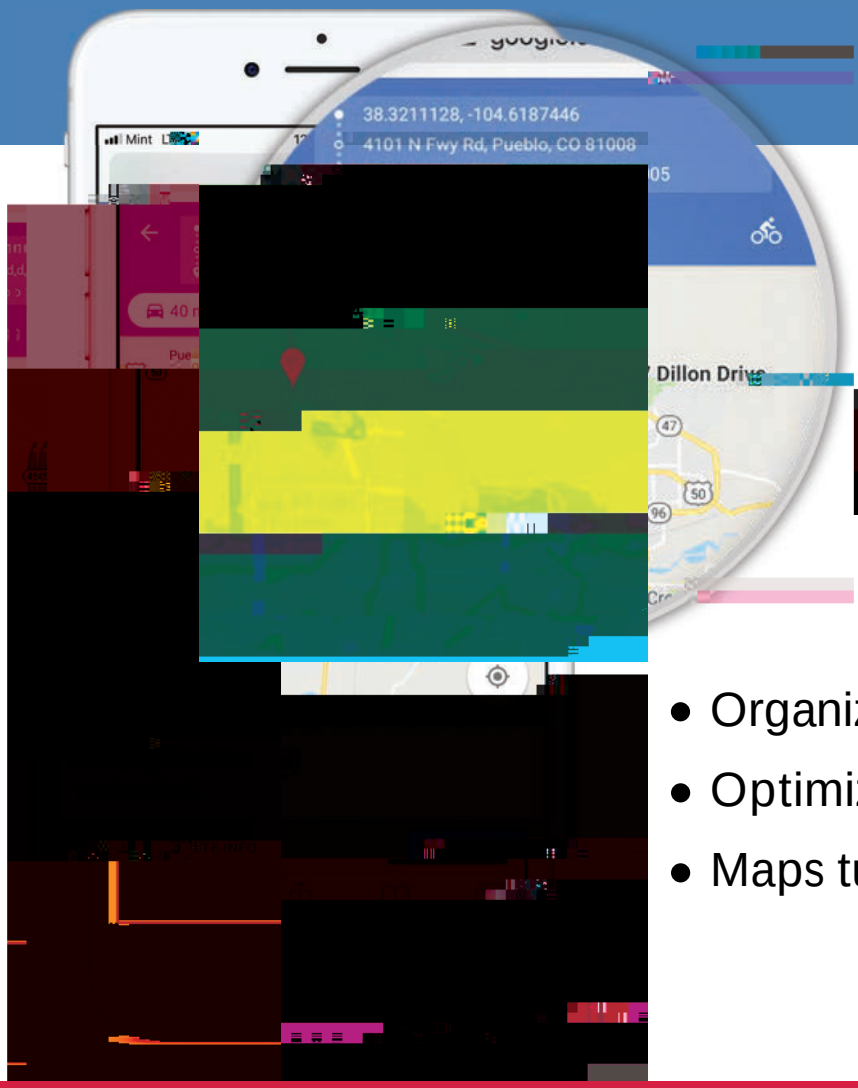
The New Standard in Surface Sanitizers

PURELL



- Organizes all daily inspections
- Optimizes the route
- Maps turn by turn directions