

# THE RICOSH NEWSLETTER

*Newsletter on Occupational & Environmental Health*

Summer 2018



*“RI Climate Resilience” Action Strategy:*

## Grow Public Transit

**R**hode Islanders will encounter many significant risks due to climate change. There will be an increase in deaths and a 25% increase in emergency department visits in Rhode Island as climate change pushes summertime temperatures higher by the end of the century. In 2017, the National Oceanic and Atmospheric Administration (NOAA) predicted a rise in sea level in Rhode Island upwards of nine feet by 2100. Rising seas increase the risk of storm surge, which leads to increased coastal damage. The inland areas of the state are also more vulnerable as instances of intense precipitation are on the rise. Since 1958, New England has recorded a 71% increase in high intensity rainfall incidents.

As the challenge of climate warming dogs us, the transportation sector is often overlooked as a key contributing sector, and as an arena where solutions could offset some of our Greenhouse Gas Emissions (GHG). Not only is transportation the largest emissions contributor, *it is the fastest growing.*

Governor Raimondo issued an Executive Order mandating a Climate Resilience Action Strategy to identify actions the state can take in the near term to prepare for a changing climate while developing guidelines for future development. The Strategy builds on the climate work of state government, municipalities, and organizations by leveraging existing studies and reports to identify critical actions to move from planning to implementation. *And a key component will address the transportation sector. Governor Raimondo has already moved on this agenda by announcing that a portion of the funds from the national Volkswagen settlement will be dedicated to RIPTA for new buses, and supporting infrastructure projects.*

### Public Transit:

#### A Solution to Climate Woes

Some propose that the solution in the transportation sector is rather simple: to shift away from fossil-fueled vehicles to electric vehicles. Though this substitution from fossil fuel to electrical vehicles may indeed reduce GHG emissions in RI it does not reflect substantial and (unaccounted for) GHG emissions embedded in the manufacture, shipping and transport of electric vehicles. GHG is a family of pollutants that has impacts globally regardless of where they are emitted. Nor should we neglect the fact that as

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## Synthetic Opioids

*Guidance for Emergency Responders  
and Public Safety Personnel*

**F**rom 1999-2016, more than 350,000 people died in the US from an overdose involving any opioid, including prescription and illicit opioids. Synthetic opioids deaths, primarily illicitly manufactured fentanyl, increased 264% from 2012 to 2015. Synthetic opioids (including fentanyl, carfentanyl and other analogues) may pose hazards to a variety of responders, and other public safety workers who could come into contact with these opioids in the course of responding to this epidemic.

Responders are most likely to encounter illicit synthetic opioids in powder, tablet, and liquid form. Potential exposure routes include inhalation, mucous membrane contact, ingestion, and percutaneous exposure (needlestick). These exposures can potentially result in a variety of symptoms including the rapid onset of life-threatening respiratory depression. Skin contact is also a potential exposure route but is not likely to lead to overdose unless large volumes of highly concentrated powder are encountered over an extended period of time.



*Synthetic opioids act quickly to depress central nervous system and respiratory functions: sometimes so severely as to be fatal. Fentanyl is a powerful synthetic drug similar to morphine and heroin but is 50 to 100 times more potent. Carfentanyl is even more potent than fentanyl and increasingly showing up in the illicit opioid stream. Naloxone (Narcan, Narcon) is an antidote to severe adverse opioid effects.*

CDC’s National Institute for Occupational Safety and Health (NIOSH) has provided preliminary guidance on occupational exposures. NIOSH conducts Health Hazard Evaluations (HHEs) on request to investigate potential workplace health hazards and makes recommendations to reduce or eliminate identified hazards. NIOSH director John Howard, MD reported at a recent meeting of the American Industrial Hygiene Association (AIHA) that of seven HHE conducted by NIOSH to evaluate first responders’ exposures to opioids none of the exposed responders experienced overdose symptoms such as respiratory distress. Although the probability of any particular response incident resulting in a life-threatening intoxication is not known at the present time, reports of ill effects in first responders at drug overdose incidents require that prudent prevention measures be taken to protect their health and safety. Respiratory depression leading to shallow breathing or apnea is the most life-threatening toxic effect of acute opioid intoxication. Acute intoxication can also cause the gradual onset of central nervous system symptoms such as drowsiness, nausea and vomiting, and dizziness. These signs and symptoms, occurring in a worker in an occupational setting where exposure to fentanyl is suspected or confirmed, should not be discounted and should

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we transfer from a fossil-fuel based source of transportation energies to an electric-based source (a positive policy) the increased demand on the electric grid itself will reflect the modes and methods whereby the grid obtains its energies: for the foreseeable future that will include, even as the proportion of renewables grows, many fossil-fuel sources including coal, shale gas natural gas.

Also unaccounted for are GHG emissions imbedded in the built environment imposed by our reliance on personal vehicles, even if electric, such as community design, traffic patterns, parking lot construction, parking garages etc., which serve to perpetuate the dominance of personal private vehicles. Land-use policies embedded in our reliance on private vehicles feed commercial and residential suburban sprawl that directly and indirectly increases GHG, as well as marginalizing economically disadvantaged communities and groups like the elderly and youth that rely on public transit. *Low-wage households living far from employment centers spend almost 40% of their incomes on transportation; in contrast low-wage families in neighborhoods well served by public transit spend about 9% on transportation.*

Nor is there any evidence that a shift to electric-fueled vehicles would address the collateral public health impact of our built environment. Electric vehicle use per se would not increase physical activity: every additional hour spent in a car electric or fossil-fueled is associated with a 6% increase in the

risk of obesity, and every kilometer walked is associated with a 5% decrease in obesity risk. Public transit users walk a median of 19 minutes daily getting to and from transit stops. Nearly 30 percent of transit users exceed the 30 minutes of recommended physical activity per day.

Rhode Island needs to put a more robust emphasis on the use of public transit to reduce GHG and meet GHG emissions target reductions.

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## Public Transit and Carbon Reduction

Public transit been recognized by the US Centers for Disease Control (CDC) the American Public Health Association (APHA) and the Union of Concerned Scientists as a pivotal mode to reduce greenhouse gas emissions (*as well as a wide range of air pollutants that are linked to respiratory and cardiovascular illness.*)

The current funding mechanism (the gas tax) is inadequate to sustain and expand public transit. A way forward is to develop

a transportation funding system that ties mitigating impacts from climate change to expanding transit which reduces greenhouse gas (GHG) emissions. This would depend on some form of carbon pricing—though the term ‘carbon pricing’ should factor in all prominent GHG emissions (methane, water vapor, etc.). A regional model similar to the Regional Greenhouse Gas Initiative is gaining attention through the 11-state [Transportation & Climate Initiative](#).

## A Way Forward

A model for how this may be achieved is California’s utilization of a GHG pricing assessment. Since 2012, California-based Microsoft business unit managers have included the price of carbon emissions in their unit when reporting profits or losses each quarter. Microsoft business units are then charged an internal tax based on each unit’s energy usage. The money is transferred into a common fund that invests in environmental sustainability projects within the company.

Microsoft’s environmental sustainability team inventories the amount of energy that each business unit in the company will consume in a quarter. This includes office space, data centers or business air travel. Those kilowatt-hours and gallons of fuel are then converted into metric tons of carbon. The environmental sustainability team then proposes projects and plans clean energy production, more energy efficient buildings and commitments to long-term

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## Opioid Exposure - continued from page 1

be managed as an acute opioid intoxication. Naloxone can rapidly counteract respiratory depression.

Meanwhile, NIOSH has identified the following responder job categories as positions where contact with illicit synthetic opioids may occur.

- **Pre-Hospital Patient Care:** Emergency medical services (EMS) providers, including first responders, fire department and private companies who attend to individuals with suspected synthetic opioids overdose may encounter drugs or drug paraphernalia on or near the patient.
- **Law Enforcement:** Law enforcement officers may come into contact with synthetic opioids during traffic stops, apprehending and searching subjects, and responding to overdose calls.
- **Investigation and Evidence Handling:** Law enforcement activities may include executing search warrants and collecting, transporting, and storing evidence. Evidence collection activities in the field have the potential to aerosolize synthetic opioid powders. Also, law enforcement personnel who handle evidence in the chain of custody have the potential to come into contact with synthetic opioids unless controls are in place to prevent exposures.
- **Special Operations and Decontamination:** Workers who conduct special operations may encounter exposure to large amounts of synthetic opioids. Examples include hazardous material incident response teams responding to a release or spill, and law enforcement officers executing search warrants on opioid processing or distribution sites, or participating in other tactical operations. These activities may aerosolize powders.

The Centers for Disease Control and Prevention (CDC) has no occupational exposure data on illicit synthetic opioids. And, there are no established federal or consensus occupational exposure limits. These recommendations are based on the reported toxicity and the chemical and physical properties of illicit synthetic opioids.

## Standard Safe Operating Procedures

Public safety and fire departments and agencies should join with local health departments, ED units in area hospitals, and local occupational health and safety resources such as COSHs, US OSHA compliance assistance and OSHA funded state OSH consultation services, university or occupational health clinics to assist in discussing and reviewing protocols to address responses to scenes where synthetic opioids are suspected to be present. Prevention measures for first responders

and other workers are available from CDC/NIOSH as well as the Drug Enforcement Administration, American College of Medical Toxicology and the American Academy of Clinical Toxicology. The American Industrial Hygiene Association (AIHA) has formed an opioids working group that will focus on protecting first responders and develop an opioids resource guide.

CDC/NIOSH has these recommendations when synthetic opioids are known or suspected to be present.

- Do not eat, drink, smoke, or use the bathroom while working in an area with known or suspected synthetic opioids.
- Do not touch the eyes, mouth, and nose after touching any surface potentially contaminated with synthetic opioids.
- Field testing of synthetic opioids is not recommended due to an increased risk of exposure to responders performing field testing. However, if detection and identification of synthetic opioids is critical to the incident response, develop an incident specific plan to perform the field testing in collaboration with local health departments, OSHA compliance assistance officers/OSH consultation services and occupational health and safety resource centers. Personnel specifically trained to perform the field testing should perform the field testing in the appropriate personal protective equipment (PPE). Some local emergency management response organizations may have portable lab units where enclosed ventilation hoods can be used to add protection.
- Avoid performing tasks or operations that may aerosolize synthetic opioids. Activities that aerosolize synthetic opioids require higher levels of PPE and should be conducted by appropriately trained personnel and should be addressed in written policies and procedures guidelines.
- Wash hands with soap and water immediately after a potential exposure and after leaving a scene where synthetic opioids are known or suspected to be present to avoid potential exposure and to avoid cross contamination. Do not use hand sanitizers or bleach solutions to clean contaminated skin.

## Training

Responders should receive special training in conducting an on-scene risk assessment related to synthetic opioids. How to recognize the form and determine the quantity of the suspected synthetic opioids and other drugs. Training should include:

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# Heat Stress: Dangerous Impact of Climate Change

One of the major health impacts of climate change is that heat waves will become more severe, become more common and will last longer. Nine out of ten deadliest heat waves on record have occurred since 1980; six of the deadliest since 2000. Heat waves will only become more common as the planet continues to warm from climate change. (Heat waves refer to three or more days of excessively high temperatures and humidity.) The 2010 heat wave in Russia killed over 50,000 people; and the summer heat wave in Western Europe in 2003 led to estimates of between 35,000-70,000 fatalities. Both heat waves have been tied by climate and public health scientists to climate change.

Even smaller increases in periods of hot weather above the norm results in increases in hospital admissions for respiratory, heart, and kidney-related illness. Rhode Islanders are more likely to seek emergency care and die on days hotter than 80 degrees,

according to Brown University researchers. The researchers found the yearly total is increasing; and they project that if days became 10 degrees hotter by the end of the century, the state would see about 80 more deaths each summer and the rate of heat-related emergency department visits would increase by about 25 percent (from about 6,000 to about 7,500 each summer). More surprising was that the Brown team found that most RI heat-related emergency room visits were not senior citizens, but among those aged 18-64. This research along with other studies demonstrates that standard heat alert warnings from the National Weather Service do not reflect the actual threats at lower temperatures. An analysis of 79 worker heat-related fatalities during 2014–2016 found only 28% occurred on those days when the National Weather Service Heat Index warned of a possibility of fatal heat stroke. (The Weather Service is now revising its Heat Index.)

## The Occupational Threat:

- Centers for Disease Control and Prevention (CDC) identified 423 worker deaths among U.S. agricultural industries and nonagricultural industries during 1992–2006.
- According to the US Bureau of Labor Statistics (BLS), 2,830 workers suffered from heat-related illness and 37 died from heat stroke and related causes in 2015.
- A review of heat worksite investigations conducted by OSHA from 2011 to 2016, found:
  - None of the employers involved had formal plans for heat acclimatization or enforced mandatory rest breaks.
  - Only 10% of employers could actually monitor the temperature of the worksites.
  - Just 36% of employers provided heat-safety training.

There is no specific OSHA standard for occupational heat exposure, though OSHA has provided information and educational resources. In some cases OSHA has used the General Duty Clause, Section 5(a) (1) of the Occupational Safety and Health Act. In this general duty clause, employers are required to provide their employees with a place of employment that “is free from recognizable hazards that are causing or likely to cause death or serious harm to employees” as a way to address worksite heat illness cases. (Some states have developed more comprehensive heat-illness prevention standards.) Professional occupational health associations have developed detailed heat-stress protocols. And CDC’s National Institute for Occupational Safety and Health (NIOSH) has produced a comprehensive document called *Criteria for a Recommended Standard – Occupational Exposure to Heat and Hot Environments* (NIOSH) Publication No. 2016-106.

## Heat’s Hidden Hazards:

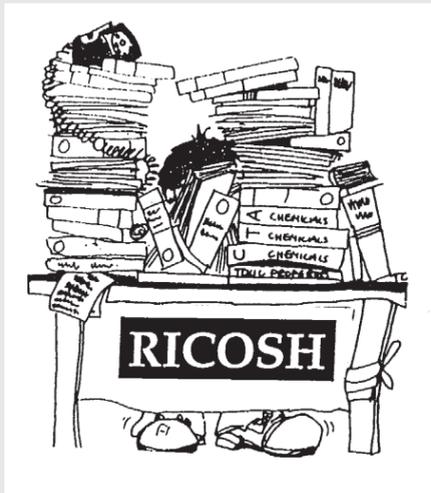
Hot weather can provoke several different illnesses, but one, heat stroke, is a major medical emergency. The body produces heat internally (metabolic processes) and receives it externally (sun, humidity, heat producing equipment, high temperatures and activity). A cooling system has evolved to avert injury. This system is finely tuned to maintain core body temperatures by sweating. As sweat evaporates, it carries heat away from the body. An active person can lose a quart or two of water an hour in hot environments. (Hazardous waste, chemical emergency response workers and firefighters are at high risk since they must wear layered protective clothing that interferes with the body’s sweating/cooling mechanism.)

Heat stroke results from the breakdown of the body’s cooling system. The cooling system works by maintaining the body’s core temperature at safe levels. But the cooling system can become overwhelmed when humidity and temperatures are constantly high as in a heat wave. When that happens, a person will usually stop sweating altogether—though not always. Many workers have been incorrectly taught that as long as they were still sweating they were not in danger of heat stroke. With heat stroke, these symptoms may all, or individually, be present: core body temperature escalates, pulse is rapid and strong, throbbing headache, dizziness, nausea, and confusion. Kidney, brain and liver injury may result. And, death can result. Heat stroke is now classified as either classic heat stroke or exertional heat stroke which is more common in workplace settings. Characteristics of the individual (e.g., age and health status), type of activity (e.g., sedentary versus strenuous exertion), and symptoms (e.g., sweating versus dry skin) vary between these two classifications. It is important to understand that it isn’t just temperature that factors into what constitutes hot weather; humidity is also a major factor, as is exertion in combination with exposure to sunlight and sources like equipment and machinery also generate radiant heat.

## Some Elements of a Heat-Healthy Program for Workers:

When unacceptable levels of heat stress occur, there are several approaches to a solution. In a controlled environment, engineering controls, including increasing ventilation, bringing in cooler outside air, reducing the hot temperature of a radiant heat source, shielding the worker, and using air conditioning equipment can reduce threats from heat stress. Heat stress can also be administratively controlled through limiting the exposure time (e.g., work/rest schedules), reducing metabolic heat load, and enhancing heat tolerance (e.g., acclimatization). Additional preventive strategies against heat stress include establishing a heat alert program and providing auxiliary body cooling and protective clothing. The following is a basic checklist for a heat-healthy program:

- Regular hydration (fluid intake) is vital. But water and sports drink intake alone will not prevent heat illnesses. It is also important to adjust the work environment and regimen.
- Take frequent rest breaks. If you work outdoors try to take these breaks inside or in a cool shaded area. The hotter it gets, take more and longer breaks.
- Schedule heavy work at cooler times.
- Workers and staff should have time to adjust to hot environments.
- Shield machinery or equipment that produces heat.
- Supply portable general ventilation and spot cooling in hot work areas.
- Providing cooling protective clothing (e.g., water-cooled garments, air-cooled garments, cooling vests, and wetted overgarments).
- Eat smaller meals and avoid sugar, caffeinated drinks, and alcohol.
- Provide training and select a crew or staff member for specific emergency medical training on how to handle a victim of heat stroke.
- Review hazards and precautions when a heat wave is predicted.



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sustainable power infrastructure to offset emissions. The company has reduced its emissions by the equivalent of 7.5 million metric tons of carbon dioxide and saved more than \$10 million through reduced energy consumption.

Investors also appear to be more interested in linking GHG emissions to investment choice. The California Public Employees' Retirement System, for example, which manages more than \$300 billion, has publicly announced support for carbon pricing efforts in its investment decisions.

- If Rhode Island adopted a GHG assessment along the lines of Microsoft's environmental sustainability team approach it could take the shape of a climate mitigation bank, for example. This bank could fund a wide range of *critical mitigation projects* that reduce GHG emissions from public transportation, biking and enhanced walking infrastructures (complete streets) and other built environment structures, to solar and wind and hydro projects supplying renewable energy.
- A major component of the climate action plan would be for RI to inaugurate a New England regional discussion that could lead to a New England consortium adopting a regional approach along these lines.

### Opioid Exposure - continued from page 2

- When to use PPE; what PPE is necessary; how to properly put on, use, take off, properly dispose of, and maintain PPE; and the limitations of PPE.
- Potential exposure routes for synthetic opioids.
- How to recognize the signs and symptoms of opioid exposure.
- When and how to seek medical help.

#### Personal Protective Equipment (PPE)

The following are the CDC/NIOSH PPE recommendations for protection against synthetic opioids. (As more information about the risks of exposure are gathered, these may be adjusted.) Identifying appropriate PPE for the risk is done by first selecting the correct job category, as defined below, and then the level of exposure anticipated. Exposure levels are defined as follows:

- **Minimal:** Response to a situation where it is suspected that synthetic opioids fentanyl may be present but no fentanyl products are visible.

*Example: An EMS response to a suspected synthetic opioids overdose or law enforcement operation where intelligence indicates synthetic opioids products are suspected but are not visible on scene.*

- **Moderate:** Response to a situation where small amounts of synthetic opioids are visible.

*Example: An EMS response to a suspected synthetic opioids overdose or law enforcement operation where fentanyl products are suspected and small amounts are visible on scene.*

- **High:** Response to a situation where liquid synthetic opioids or products are visible.

*Example: Any illicit synthetic opioid storage, distribution facility, operation, or production laboratory.*

It is important to recognize that the exposure level initially selected can change and PPE should be adjusted accordingly. Additionally, higher levels of PPE may be necessary to protect responders from exposure to other chemicals that may also be present in addition to synthetic opioids especially in those spaces where bulk amounts are manufactured stored and transported. As new research becomes available, check updates. (CDC.GOV/NIOSH/TOPICS/FENTANYL/RISK.HTML)

OSHA's hazardous materials standard (29 CFR 1910.120) governs any post scene clean-up operations involving hazardous substances. When required, responders should be trained on the potential hazards they might encounter and the necessary knowledge and skills to perform their work with minimal risk to their own safety and health and that of other responders.

# RICOSH

## Newsletter

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