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THE PREVENTATIVE MEASURE

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Triannual Newsletter of the National Capital Area Environmental Health Association



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President's Message



Greetings!

I hope your 2024 has been off to a great start as we dive into Spring! We started off the year with our first Educational Conference held this past January 31st at the Fairlington Community Center in Arlington, Virginia. Here, we heard from a number of various speakers, including Pablo Quinonez, speaking on Environmental Health in Emergency Response and Food Preparedness from Fairfax County; Arlington County's Sahill Patel and Julia Balsley speaking on the recent Salmonellosis Outbreak in Virginia; Kara Hoisington of Fairfax County speaking on HACCP Plans for Kimchi; Eve Elliott presenting on the City of Alexandria's EH Communications and Outreach; and Pest Management from Vicki Decker. In addition, we held an installation ceremony for our new 2024 Board Members as we welcomed Amanda Barto (VP of Membership), Jasmine McNally (Secretary), Maxine Linthicum (MD Rep), Kara Hoisington (VA Rep) and Abdul Monsur (DC Rep). We had a great turnout of approximately 50 active members. Thank you to all of our renewing members for your continued support! To all of our newly welcomed members this year, we are happy to serve you! As a reminder, if you have not already renewed your 2024 Memberships, you may easily do so by logging into your profile at ncaeha.org! Membership fees at \$20 are still at one of the lowest rates in the nation, so take advantage of this while it lasts!

This coming May 13th, we will hold our second Educational Conference of the year, to be held at the new DC Health Building in Washington, DC. With a brand new venue, we are excited to connect with our members once again! We have a number of speakers lined up for this conference, including DC Health's very own Gerard Brown, Program Manager of the Rodent and Vector Control Program! We will also be hearing from our NEHA Region 8 VP Representative, James Speckhart, who will be presenting on Drought Conditions in relation to Public Health – and as NCAEHA members, you will be the first group to hear on this topic before it is presented at the NEHA AEC this July in Pittsburg, PA! Please refer ncaeha.org/events to register and find further agenda information as well as parking/metro and food options! RSVP now!

Our NCAEHA Awards and Scholarship applications will be announced soon! Nomination forms will be available on our website this spring. Nominate yourself or a colleague for one of our prestigious awards, the Jerrold M. Michael Award, James M. Wordsworth Scholarship, NEHA Certificate of Merit (Individual or Group), Dedicated Service Award, Environmental Health Innovation Award, NCAEHA Industry Award. In addition, we will be selecting winners for our VA, MD and DC Members of the Year! Award Winners will be recognized during our Annual Awards Dinner this summer.

With much in store for you these next few months, we are so excited to see it all come together! See you soon! Nicole Gragasin NCAEHA.President@gmail.com

Artificial Intelligence in Food Fraud and Traceability

Frank Abimbola, Ogundolie et al. "Artificial Intelligence in Food Fraud and Traceability." *Sensing and Artificial Intelligence Solutions for Food Manufacturing*. 1st ed. Vol. 1. United Kingdom: Routledge, 2023. 117–130. Web.

ABSTRACT

The healthy growth of humans and animals depends on consuming good foods. The adulterations – tampering with food labels and/or repackaging of food – which is largely committed by producers with the primary aim of maximizing profits, are of great concern globally today. The health risks of consuming such food ranges from mild infections to death. Today, artificial intelligence (AI) in packaged foods is rising to the challenge. The use of AI-based food packaging like radio frequency identification (RFID), barcoding, and quick response (QR) codes, is ensuring that packaged foods are secured but also, that these foods can be traced between the manufacturing line and the end-user. AI data technologies have been a twentieth-century innovation that increases consumers' confidence in the packaged foods.

INTRODUCTION

Food fraud (FFD) and traceability are inherently linked in the sense that, fraud is the problem, while traceability is the way to resolving the problem (Zheng et al., 2021). Several definitions exist for food fraud; they share common views and can be broadly described as any deceitful dilution or addition to a raw material or food product, fraudulent manipulation, intentional or unintentional substitution, or misrepresentation of the food product for monetary gain (this can be achieved by either inflating the apparent value or decreasing production cost of the product) (González-Pereira et al., 2021).

Similarly, according to the description of Codex Alimentarius, food traceability is "the ability to follow the movement of a food through specified stage(s) of production, processing and distribution", while European Commission stated that 'traceability' is the "ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing & distribution" (Regulation (EC) No 178/2002, EC 2002).

Traceability can be carried out during supplies, processing, and consumption levels as a measure to uncover food fraud, or to prevent food fraud, in which case, it goes a long way to protect brands (Corina, 2013). With the steady rise in the world population, it has been projected that there will be a 98 percent rise in the demand for food by 2050 (Mavani et al., 2021), and this is expected to lead to a greater extent, a more complex production chain that is insensitive to safety concerns such as contamination of foods, disease spread such as pandemics or epidemics in

human beings, aquatic lives, domesticated and non-domesticated animals, deceitful farming methods, food fraud – even food authenticity-related problems (Mavani et al., 2022). When dealing with the control of epidemics, some factors such as monitoring, traceability and data analysis to ensure food safety is of great importance. These factors also are considered when preventing an outbreak/epidemic (Zheng et al., 2021).

FOOD FRAUD AND TRACEABILITY

To achieve food security in global society today, efforts need to be put in place to ensure proper control of the food system. The common practice in the food sector is the use of misleading information provided on the packaging materials of several packaged foods. This is also associated with food security or food harm (Lord et al., 2017). This is of more concern because the rate of consumption of packaged foods has greatly increased over the years. Today, occurrences of fortified food content or packaging of adulterated items are now on the rise.

Thakur et al. (2017) observed a case of food fraud when they analyzed the contents of canned food with the expectation that it would contain deer meat; upon analysis, they discovered that the meat in the can was from a pig. This kind of food fraud can be harmful to humans, especially for those that have serious allergies to some specific meals/compounds.

Food fraud has been attributed to several packaged products, which includes wine, beverages, meat, poultry, dairy and fish products (Roberts, 1994). Over the decades, the main purpose of food fraud is in the area of commercial crime. As explained by both it entails turning a blind eye to the health danger of the food package and concentrating solely on maximizing the profit from the foods to ensure wealth generation (Naylor, 2003; Lord et al., 2017). Alteration of results, misinformation, production of counterfeit/substandard goods, adulteration, forging importation documents, or diversion are the common methods of food fraud used in various food

processing industries (Spink, J., and Moyer, 2011; Obbink et al., 2014; Lord et al., 2017).

Despite the numerous and emerging forms of FFD occurring over the years, it can generally be categorized into two major types (Obbink et al., 2014). The type that involves repackaging of old and expired products, which are harmful to the end user (consumers), and the intentional misrepresentation of packed foods caused by adulteration, diversion of the original foods, production of substandard goods, or use of misleading packaging information, either by providing for content or by labels misrepresenting the contents.

REPACKAGING

This type of food fraud is the most dangerous because expired foods are being repackaged and rebranded for sale (Obbink et al., 2014). In many cases, various diseases are associated with the consumption of such expired food products.

In drugs, the repackaging of expired products, or products without active ingredients (Williams and McKnight, 2014), is fast becoming of growing concern, seeking different regulations and working effortlessly on ensuring a system for easy detection of such products. That system is readily available to the consumers (Kaoud and Kurdi, 2022). A common method used in addressing this is in the application of barcodes on the packages, which can be used to trace the production line, quality control check, information about the products, and finally confirm the genuineness of the product. In Nigeria, some specific drugs that are highly prone to food fraud are packaged with barcodes that can be unveiled by the end-user, and the serial number can be used to ascertain the authenticity of the product.

FOOD TRACEABILITY

In recent years, due to the several incidences of FFD and safety issues, the use of food traceability has recently evolved as a key mechanism for monitoring food products across the food supply chain. In the food sectors, delivery of food products from the manufacturer or farmer to the consumer requires strong technical expertise, robust database management, reliable data, and improved food safety culture. Perhaps, the best way to address the problems associated with food fraud and safety issues is to establish a solid and reliable food traceability system. The traceability system ensures that high food quality and safety are guaranteed, and this could solve the problem of trust between consumers and manufacturers. Studies relating to food traceability systems today are dependent on availability of big data using artificial intelligence (AI) and the Internet of Things (IoT) which identifies issues and suggests ways to address these challenges. Some of which are posed by data storage or inadequate information/statistics in the local or conventional traceability systems and also low credibility of these conventional systems (Rejeb et al., 2022).

Over the past decades, AI has been suggested as a viable technology to advance and transform food safety practices. The application of AI in various tasks such as food quality determination, control tools, classification of food, and prediction purposes has intensified their demand in the food industry. Artificial intelligence involves the capacity of computers to emulate the human learning process, knowledge, or data storage for smart execution of commands. Artificial intelligence systems utilize data provided to analyze a given condition or environment then effectively take actions. These systems are designed to be independent, as they have some level of freedom to carry out set goals. They use big data to improve their behavior and increase their problem-solving abilities, which includes effective execution of targeted goals/tasks (Mavani et al., 2022). AI-based systems can either be software-based or embedded in hardware devices. AI-based systems have a wide range of algorithms to choose from such as expert systems, reinforcement learning, and fuzzy logic (FL), Turing test, swarm intelligence, cognitive science, artificial neural network (ANN), and logic programming. The

effective and efficient performance of AI has made it the most favorable tool to use in industries for decision making and process estimation aimed at overall cost reduction, quality enhancement, and improved profitability.

IMPORTANCE OF FOOD TRACEABILITY

Food fraud is a menace and deserves more attention due to the numerous health and economic risks customers face because of this problem. In most cases, and depending on the kind of food fraud committed, severe illness, food allergies, and even death can be caused by food fraud. On the other hand, food traceability of foods from farm to fork is important when considering that the food products supplied to the public have to meet basic food regulatory demands, for consumer protection and safety (Chhikara et al., 2018).

Additionally, as a vital tool for each food business, food traceability provides information within the business for process control and management. More importantly, food traceability enhances stock control, efficient translocation of food products, effective quality control, collection, collation, and storage of information about food ingredients and products. Food traceability is an essential component in the food manufacturing industry which ensures the safety of domestic and global food supply and assures the customers of brand protection. Every food manufacturer must, therefore, ensure that their food traceability systems are up to the highest standards to protect the brand image in the market while also guaranteeing food safety.

Consequently, these growing requirements are pushing food manufacturers and processors to maintain upstream and downstream traceability in the food supply chain.

Food companies, the primary challenge(s) faced daily, revolves around the development of more cost-effective and safe methods of ensuring optimal traceability of their products. Depending on the products being transported or manufactured, some companies utilize traceability systems to ensure raw materials are properly traced along the line of production down to the consumers. Traceability can enable experts or administrators to quickly differentiate dangerous goods and also ascertain their level of deterioration.

Food traceability must be treated as a very important component in the food supply chain to minimize risk factors to the producers and consumers. Food traceability will help the manufacturers/suppliers track the food product and also increase consumer acceptability (Chhikara et al., 2018).

APPLICATION OF ARTIFICIAL INTELLIGENCE IN FOOD TRACEABILITY

The use of AI in food traceability can be applied for various purposes in the different food industries (Mavani et al., 2021). AI-assisted food traceability can be applied between the inventory and utilization of starting materials, the received unit, usually referred to as the raw material unit, and the final product. It can be used to trace the source of the units, the supplier, the buyer of the units sold; or even applied throughout the food chain (Mavani et al., 2022). Within the past decade, there has been a growing global interest in AI and business automation because of increased access to and generation of data. In like manner, advances in computing power have sparked new research, investment, and applications across many industrial and service sectors, including the food industry (Sharma et al., 2021).

Application of artificial intelligence in the food sector ensures that enormous improvement is achieved during food production and processing. With automation, food manufacturers are rapidly growing their businesses by predicting market situations while concentrating their efforts heavily on logistics, which largely includes the various supply chains, has resulted in a shift in the consumer consumption patterns, especially for the products with short shelf lives (Mavani et al., 2022). Although the implementation of the use of modern technologies such as AI, machine learning and big data is far from been fully executed in these industries, companies using this technology have been reporting a better profit margin compared to those using the conventional techniques and/or methods.

APPLICATION OF AI IN FOOD FRAUD; IMPLICATIONS OF FOOD FRAUD

Food fraud is an old menace whose origins are very difficult to trace. However, over the centuries and decades, the incidence of food fraud has continued to evolve, especially as policymakers in governments come up with new regulations to checkmate the menace. Despite being under-reported because of the technicality involved in identifying food fraud, the effects of food fraud are always far-reaching with economic, health, and social and religious implications. Food fraud occurs in many food products including fruits, vegetables, meats, fish, spices and chili powder, alcoholic drinks, fruit juice, baby foods, beverages, soft drinks, rice, canned foods, and so on. Over the years, there have been many

reported cases of food fraud that have led to deaths, hospitalizations, huge financial losses, termination of business contracts, recall of products from the markets, customer distrust and so on. Herein the economic, health, social and religious implications of food fraud are summarized with a few examples that were reported.

HEALTH IMPLICATION

Perhaps, one of the biggest outcomes of food fraud all over the world is the huge impact it has on public health. Over the years, public health concerns regarding the risk associated to food fraud has been on the rise. There have been several reported cases of food fraud that have had different health implications. A notable example is the European horsemeat food fraud of 2013, where beef was adulterated with horsemeat and other adulterants. Further investigations revealed that some batches of the horsemeat already on the market contained phenylbutazone (BBC, 2013b). Phenylbutazone is a cyclooxygenase inhibitor, and also a non-steroidal antiinflammatory drug (NSAID) commonly administered to animals for treating short term pain and fever. However, the use of phenylbutazone for humans was severely restricted in the United States due to reported concerns that the compound could be an inducer of some blood dyscrasias such as leukopenia, thrombocytopenia, aplastic anaemia, and agranulocytosis. In some cases, the use of phenylbutazone led to some fatalities (Lees and Toutain, 2013). A study by Kari et al. (1995) also revealed that phenylbutazone is a potential carcinogen that was linked to the onset of tumours in rats and mice kidneys and livers, respectively (Kari et al., 1995).

Another incidence of food fraud with massive public health implications occurred in China in 2008 when powdered infant milk was deliberately adulterated with cyanuric acid and scrap-grade melamine. Cyanuric acid is a member of the triazine family of compounds and is produced as an intermediate during the synthesis or degradation of melamine. Melamine is a nitrogen-rich compound that is used to manufacture several plastic products, coatings, adhesives, kitchenware, paints, and fertilizer mixtures. Cyanuric acid and melamine were added to dairy products to falsely exaggerate the amount of protein present

in the various dairy products. This act of food fraud was responsible for the hospitalization of 52,000 children out of about 300,000 children who fell ill with 6 deaths recorded and several cases of acute renal failure or urinary tract stones confirmed among the hospitalized children (BBC, 2010; Gossner et al., 2009).

Although there is still no study that has investigated the oral toxicity of melamine in humans, studies in rats have reported a lethal dose, LD50 of 0.316g/kg of body weight. However, investigations into the amount of melamine added to the infant milk product in 2008 revealed that melamine concentration ranging from 0.15 to 4.7 g/kg with a median of 1.9 g/kg detected in the milk products tested (WHO, 2008). A major contributor to the health hazard of melamine in the milk product was the formation of a toxic cyanuric acid-melamine co-crystalline complex through hydrogen bonds. The cyanuric acid-melamine co-crystalline complex formed a precipitate that accumulated in the renal tubules and caused renal failure in many hospitalized children (Dobson et al., 2008; Bhalla et al., 2009).

A common and conventional way of artificially enhancing the ripening of some fruits involves the application of calcium carbide. This has been a common practice in many developing countries. This act of food fraud is mostly committed for quick sales of food products owing to the increased demand for fruits and vegetables. The commercial production of calcium carbide was intended for the desulphurization stage in steel production, welding, and the synthesis of calcium cyanamide and acetylene. But its use in fruit and vegetable ripening is an act of food fraud with health implications that can be deleterious.

During the process of utilizing calcium carbide for artificial and quick ripening of some vegetables or fruits, the dissolution of calcium carbide in water produces acetylene. Acetylene is an analogue of ethylene, which is a natural fruit-ripening agent produced by fruits. In the presence of oxygen, the acetylene acts as a sedative and could lead to hypoxia, headache, memory loss, loss of consciousness, cerebral oedema, and lactic acidosis (Per et al., 2007). Commercially produced calcium carbide has been reported to contain heavy metals like arsenic and traces of phosphorus hydride (Per et al., 2007; Bandyopadhyay et al., 2013; Maduwanthi and Marapana, 2019). Traces of arsenic could be stored in the fruits and vegetables subjected to calcium carbide treatment. Consumption of such contaminated fruits or vegetables could lead to the accumulation of arsenic in the muscles, kidneys, heart, lungs, and liver. Over time, the bioaccumulation of non-metabolized arsenic in the body marks

the onset of arsenic neurotoxicity, hepatotoxicity, nephrotoxicity, and carcinogenicity (Okeke et al., 2022).

One form of food fraud that is mostly unreported in many parts of the world is committed by food vendors. In their quest to maximize profit, many food vendors intentionally purchase substandard or expired or rotten food ingredients because the ingredients are sold at a ridiculously cheaper rate. Rotten tomatoes, pepper, onions, cabbage, meats, fish, eggs, and expired canned ingredients like green peas, spices, and food additives are examples of food ingredients that fraudulent food vendors purchase to cut costs. Consumption of food prepared with substandard/expired/rotten food ingredients can lead to food poisoning or foodborne illnesses because they contain harmful microbes and chemical substances.

Microbes like *Vibrio cholerae*, Enterohaemorrhagic *Escherichia coli*, *Salmonella*, *Shigella*, *Campylobacter*, *V. parahaemolyticus*, *Staphylococcus aureus*, *Listeria*, norovirus, trematodes, nematodes, *Entamoeba histolytica*, *C. perfringens*, *Echinococcus* spp., and *Clostridium botulinum*; chemicals like mycotoxins and biotoxins and heavy metals like arsenic, mercury, and lead. are examples of food contaminants associated with foodborne illnesses. According to a report by the World Health Organization (WHO), at least 600 million people in the world get sick from foodborne illnesses with about 420,000 deaths recorded annually (WHO, 2020). Common foodborne illnesses include Salmonellosis, shigellosis, campylobacteriosis, listeriosis, giardiasis, vibrio infection, norovirus infection, viral gastroenteritis, and so on, and some common symptoms associated with foodborne illnesses are diarrhea, nausea, weight loss, bloating, dehydration, fatigue, headache, loss of appetite, and abdominal cramps.

In some West African countries, particularly Nigeria and Ghana, systematic adulteration of crude palm oil by their manufacturers has been reported using potash, red dye and Sudan IV dye with the sole aim of maximizing profits (Andoh et al., 2019; Kola-Ajibade et al., 2021; MacArthur et al., 2021). Though Nigeria and Ghana produce one of the best natural palm oils in the world, the high demand for palm oil from these countries contributed to the fraudulent acts of adulterating crude palm oil from Nigeria and Ghana with Sudan IV dye. Sudan IV dye, a lysochrome diazo dye that is widely utilized as a color pigment for the

commercial production of soaps, shoe and floor polishes, inks, plastics, and textiles among others. The addition of Sudan IV dye in crude palm oil gives an exaggerated red coloration that deceives the unsuspecting retailer or consumer into believing that the oil is 100 percent natural palm oil. The health implication of consuming Sudan IV can be fatal over time. The consumption of Sudan IV dye has been reported to cause impairment of hepato-renal functions, over-expression of pro-inflammatory cytokines, induction of reactive oxygen species, and inhibition of the activity of antioxidant enzyme catalase (Eteng et al., 2022; Kola-Ajibade et al., 2021; Li et al., 2017).

Adulteration of alcoholic drinks with methanol is a common food fraud activity that is practiced in many countries. Methanol is a harmful alcohol when accumulated in large quantities; it is used as a renewable energy source for fueling automobiles and ships, for plastic production, and also in making pesticides (Dalena et al., 2018; Simon Araya et al., 2020). Methanol is added to wines and other alcoholic drinks by food fraudsters because it is relatively cheaper and highly intoxicating. However, the health implication of methanol poisoning can be fatal. Upon ingestion, methanol can be oxidized to formaldehyde by the enzymatic activity of alcohol oxidase and catalase. And formic acid production through the action of aldehyde dehydrogenase on formaldehyde (Li et al., 2021).

Formation of formic acid as a metabolite is the basis for the toxicity of methanol. Methanol poisoning has been linked to loss of vision and restricted diffusion of the optic nerves, metabolic acidosis, multiple organ failures, damage to the central nervous system and nerve cell degeneration, intracranial hemorrhage, coma, and death (Chan and Chan, 2018; Mojica et al., 2020; Rahimi et al., 2021). Over the years, there have been several reported cases of methanol poisoning that led to the death of scores of consumers in different countries (Hassanian-Moghaddam et al., 2015; Rahimi et al., 2021; Rostrup et al., 2016; Zakharov et al., 2014)

ECONOMIC IMPLICATION

The economic implication of food fraud cannot be overlooked. Food manufacturers are faced with different kinds of economic losses owing to food

fraud. These can be from loss of income revenue due to the circulation of adulterated/counterfeit and relatively cheaper alternatives in the market by food fraudsters, or the recall of substandard food products, or the outright cancellation of business contracts. According to the Grocery Manufacturers' Association, one out of every ten food products available on the market is affected by food fraud. And these products of food fraud are reported to cost at least \$10 billion per annum (Johnson, 2014; Manning, 2016).

An example of a food fraud case with huge economic implications was the European horsemeat food fraud of 2013, which involved many meat-processing/supplying companies in the UK, France, Belgium, Italy, Spain, Switzerland, Luxembourg, Latvia, Lithuania, and The Netherlands. In this food-fraud case, horsemeat, pork, and other adulterants were reportedly packaged and labelled as beef, as revealed by the detection of equine and porcine DNA in some of the meat samples tested (BBC, 2013a; FSAI, 2013). The horsemeat food fraud case led to the recall and destruction of the adulterated meat from the market with enormous economic losses recorded by the companies. During this period, the sales of beef were negatively affected as the consumers were skeptical about meat products labelled as beef. Thus, causing low revenues for authentic beef processing companies and suppliers across Europe (BBC, 2013b; Regan et al., 2015).

In many instances of food fraud involving a manufacturer or even a retailer, some consumers assume that every other food product supplied or sold by the manufacturer and/or retailer could also be a product of food fraud. This can eventually lead to a reduction in sales and possible expiration of other products on offer from the manufacturer and/or retailer even when the other products are authentic. The economic impact is usually worse on the manufacturer when there are alternative products that the customers can purchase in the market.

For instance, during the melamine milk scandal in China, the sales of locally produced milk reduced by almost 40 percent while the sales of imported milk increased from 37 to 47 percent suggesting that some consumers developed a preference and trust for imported milk over the locally produced milk owing to the food fraud incidence that involved locally produced milk (Qiana, et al., 2011). Other economic implications of the Chinese melamine milk scandal included the Chinese government's seizure of more than two thousand tons of adulterated milk products while around nine thousand tons of the same product were recalled by a supplier (Gossner et al., 2009).

The economic impact of this food fraud was far-reaching as dozens of countries either banned melamine-containing foods or recalled those

already in circulation (Bhalla et al., 2009). Another economic implication of food fraud is the possible termination of bilateral trade agreements between countries upon the detection of contamination/adulteration in imported food products. In 2004, the Sudan IV dye food fraud activity in Ghana was flagged by the European Commission's Rapid Alert System for Food and Feed (RASFF). In their 2004 report, RASFF notified the European Union of the rise in the adulteration of imported palm oil with Sudan IV dye. This prompted many European countries to ban the importation of palm oil from Ghana – the major African exporter of palm oil to member states of the European Union (RASFF, 2004). The ban on the importation of palm oil from Ghana had some economic consequences on Ghana as the foreign exchange derived from the export of palm oil was affected owing to food fraud activities.

SOCIAL IMPLICATIONS

Food fraud also has some social implications that determine how consumers perceive a particular food manufacturer involved in intentional or unintentional food fraud activity. Following the abovementioned European horsemeat food fraud of 2013, there was huge customer dissatisfaction and a loss of credence towards the beef suppliers. Also, in the European beef supply chain, the extensive media outcry over the incident contributed immensely to the consumer's distrust and made the public concerns about the integrity of those involved. (Manning, 2016)

RELIGIOUS IMPLICATIONS

Some religions have certain dietary restrictions that believers are expected to strictly obey. Some cases of food fraud where the fraudsters have intentionally, or unintentionally, adulterated or mislabeled food items have caused people of a particular religious faith to consume food items that are considered sacrilegious to their religious beliefs. Again, during the European horsemeat food fraud, when beef was adulterated with other undeclared meats like horsemeat and pork, unsuspecting Jews and Muslims who consumed the adulterated beef were made to break a law in Judaism and Islam that forbids the consumption of pork. There are many cases of food fraud that go unreported, either because the consumers and suppliers do not possess the necessary tools for testing the quality of the food or because the government agencies/authorities responsible for ensuring high quality of food have been compromised by manufacturers of substandard/adulterated food. Whichever is the case, the consumers tend to suffer most from the effects of food fraud.



IF YOU HAVEN'T ALREADY, IT'S TIME TO RENEW YOUR MEMBERSHIP!



BENEFITS OF MEMBERSHIP:

- ✓ **Be a part of a local association in the DC, MD, and VA area that is focused on environmental health (EH)**
- ✓ **Network with other local EH professionals in academia, industry, government, private sector, and other areas**
- ✓ **Advance your career by pursuing a credential or certification with our discounted annual courses like the REHS, CP-FS, CPO, and more**
- ✓ **Gain more knowledge and/or earn up to 15 Continuing Education hours per year by attending our nearby Educational Conferences**
- ✓ **Enjoy a good time with your EH colleagues and build new connections at our social events**
- ✓ **Recognize an EH professional by nominating them for an award or scholarship**
- ✓ **Pursue local EH employment opportunities with easy accessibility through our announcements**
- ✓ **Stay updated through our newsletter, website, and social media and announcements on other events, trainings, webinars, and more**

Memberships expire on December 31, 2023.
Regular Membership Renewal: \$20.00
Student and Silver Membership Renewal: \$5.00

Membership Renewal may be completed online at www.ncaeha.org
by simply logging onto your profile and click the RENEW button!
Payments are accepted online via credit card.

2024 NCAEHA SPRING EDUCATIONAL CONFERENCE

CO-HOSTED BY
DC DEPARTMENT OF HEALTH

Monday, May 13, 2024

9:00am - 2:45pm

2201 Shannon Place SE, Washington DC 20020
DC Health, Conference Room 7th Floor

8:30AM - 9:00AM	REGISTRATION AND LIGHT BREAKFAST SNACKS
9:00AM - 9:10AM	WELCOME AND OPENING REMARKS ABDUL MONSUR, NCAEHA D.C. REPRESENTATIVE ARIAN GIBSON, ASSOCIATE DIRECTOR, DC HEALTH
9:10AM - 9:40AM	COMMUNITY HYGIENE IN DC: SWIMMING POOLS, BEDDING, SALONS, AND MORE! DENISE LUCAS, SUPERVISORY SANITARIAN, DC HEALTH QUINCY CURETON, LEAD SANITARIAN, DC HEALTH
9:40AM - 10:30AM	RODENT CONTROL IN WASHINGTON, DC GERARD BROWN, PROGRAM MANAGER, RODENT AND VECTOR CONTROL, DC HEALTH
10:30AM - 10:40AM	MORNING BREAK
10:40AM - 11:30AM	FOOD VENDING REQUIREMENTS IN THE DISTRICT OF COLUMBIA SHARON CAVE, FOOD SANITARIAN, DC HEALTH JEMAL YASIN, SANITARIAN, DC HEALTH
11:30AM - 12:30PM	LUNCH PROVIDED
12:30PM - 12:45PM	NEHA UPDATE CDR JAMES SPECKHART, REGION 8 VP, NEHA
12:45PM - 1:35PM	AN INTRODUCTION TO RADON RYAN D. PARIS, VDH- ORH RADIATION SAFETY SPECIALIST & RADON COORDINATOR
1:35PM - 1:45PM	AFTERNOON BREAK
1:45PM - 2:35PM	DROUGHT CONDITIONS EMERGING ON THE USA LANDSCAPE: HOW TO RESPONSIBLY PRACTICE WATER WISE CONSERVATION CDR JAMES SPECKHART, MS, REHS, COHC FDA
2:35PM - 2:50PM	GROUP DISCUSSION: CURRENT AND EMERGING TRENDS IN EH ABDUL MONSUR, NCAEHA DC REPRESENTATIVE
2:50PM - 3:00PM	CLOSING REMARKS NICOLE GRAGASIN, NCAEHA PRESIDENT

**Agenda subject to change.*

Register online at ncaeha.org/events

Awards and Scholarships 2024

Now is the time to recognize a fellow individual or colleague with one of our renowned NCAEHA Awards! We are offering 9 Awards and 1 Scholarship to deserving individuals who have made great contributions to Environmental Health and our organization. Applications may be found on our website at ncaeha.org/awards and are due to our VP of Membership no later than May 28th, 2024.



James M. Wordsworth Scholarship

James Wordsworth has been a long standing restaurateur and advocate for the work Environmental Health Professionals do to help keep the public safe. Mr. Wordsworth is a Honorary Lifetime Member of NCAEHA and every year helps make a scholarship available to a candidate that is seeking higher education in a field related to Environmental Health.

Jerrold M. Michael Award

Jerrold Michael was the Founding President of NCAEHA. He was a true leader and pioneer in the field of Environmental Health. This award is to recognize a professional in the field of environmental health that has contributed to his or her employer's environmental health mission, to the goals of the National Capital Area Environmental Health Association, and to the advancement of the environmental health profession.

NEHA Certificate of Merit

Each year, NEHA recognizes one individual and one team, from each of its Affiliates, who has made outstanding contributions to the profession of environmental health. It is one of the benefits of your affiliation with NEHA. Recipients are announced in the NEHA Journal of Environmental Health.

Dedicated Service Award

This recognition is awarded to Long-term members who are retiring this year. Candidates can be nominated by any member of NCAEHA. Eligibility: to be eligible a nominee must: be an Environmental Health Professional that is approaching retirement within the next year, be a member in good standing of NCAEHA for a minimum of 2 years, be actively engaged in the field of environmental health, and have performed professional duties in the field of environmental health above and beyond the usual employment requirements so as to elevate the professional status of the Environmental Health Professional.

Environmental Health Innovation Award

This award is presented to a NCAEHA member or organization for creating a new idea, practice or product that has had a positive impact on improving the environment or public health and quality of life. The purpose of this award is to recognize these individuals and to encourage others to search for creative solutions.

NCAEHA Industry Award

This award is presented to a company or industry which has demonstrated support to NCAEHA and has made a significant contribution to the field of environmental health and/or to NCAEHA.

Members of the Year - VA, MD, DC

These members are chosen by the VP of Membership and Secretary and are awarded for their outstanding dedication to NCAEHA. Winners will have demonstrated active conference attendance, committee work, and have been active Members for 2 years or more. A selection from Virginia, Maryland, and DC will be awarded, if applicable.



National Capital Area Environmental Health Association

James M. Wordsworth Scholarship Application

About the award: James Wordsworth has been a long standing restaurateur and advocate for the work Environmental Health Professionals do to help keep the public safe. Mr. Wordsworth is an Honorary Lifetime Member of NCAEHA and every year helps make a scholarship available to a candidate that is seeking higher education in a field related to Environmental Health.

1. Name (Last, First, Middle Initial): _____

2. Permanent Address: _____

3. City: _____ State: _____ Zip Code: _____

4. Telephone Number: _____

5. E-mail Address: _____

6. Are you an active member of the National Environmental Health Association (NEHA)? YES / NO

7. Are you an active member of the National Capital Area Environmental Health Association (NCAEHA)? YES / NO

8. Education (list most current first):

School	Major	Dates	Degree
1.			
2.			
3.			

Year and date of expected graduation from current program: _____ GPA: _____

9. Employment history (list present employer first):

Employer	Job Title	Years Employed
1.		
2.		
3.		

10. Write a short summary of your professional achievements, including any major contributions you have made that resulted in the increased protection of human health and the environment. (Attach additional page)

11. List civic groups and other community activities of which you are a member. Also, note any special honors received. (Attach additional page)

12. Provide one letter of recommendation from either the school in which you are currently enrolled, an active NCAEHA member, or a current or past supervisor

Send completed application by **May 28, 2024** to: NCAEHA.VP.Membership@gmail.com



National Capital Area Environmental Health Association
Nomination Form for: Jerrold M. Michael Award
(Environmental Health Professional of the Year)

***About the award:** Jerrold Michael was the Founding President of NCAEHA. He was a true leader and pioneer in the field of Environmental Health. This award is to recognize a professional in the field of environmental health that has contributed to his or her employer's environmental health mission, to the goals of the National Capital Area Environmental Health Association, and to the advancement of the environmental health profession.*

NOMINATED BY:

Name: _____

Job Title: _____

Address: _____

Phone: _____

E-Mail: _____

NOMINEE:

Name: _____

Job Title: _____

Employer: _____

Please attach a brief (one page or less) explanation of the reasons you believe that the above named individual should be selected as this year's **Jerrold M. Michael Award** recipient. Specifically describe how this person has contributed to his or her employer's environmental health mission, to the goals of the National Capital Area Environmental Health Association, and to the advancement of the environmental health profession.

THE NOMINATION COMMITTEE MAY CONTACT YOU FOR ADDITIONAL INFORMATION.

Nominations may be sent either by postal service or email to
NCAEHA and must be received by **May 28, 2024**.

Send complete nominations to:
NCAEHA.VP.Membership@gmail.com



National Capital Area Environmental Health Association
**Nomination Form for: NEHA Certificate of Merit Award
For Individual or Team**



***About the award:** Each year at the NEHA Annual Educational Conference & Exhibition (AEC), NEHA recognizes an individual or team, from each of its Affiliates, who has made outstanding contributions to the profession of environmental health. It is one of the benefits of your affiliation with NEHA and your local Affiliate chapter. This is a National recognition.*

NOMINATED BY:

Name: _____

Job Title: _____

Address: _____

Phone: _____

E-Mail: _____

NOMINEE:

Name: _____

Job Title: _____

Employer: _____

Please attach a brief (one page or less) explanation of the reasons you believe that the above named individual or team should be selected as this year's **Certificate of Merit Award** recipient. Specifically describe how this person or team has contributed to the field of Environmental Health.

THE NOMINATION COMMITTEE MAY CONTACT YOU FOR ADDITIONAL INFORMATION.

Nominations may be sent either by postal service or email to NCAEHA and must be received by **May 28, 2024**.

Send complete nominations to:

NCAEHA.VP.Membership@gmail.com



National Capital Area Environmental Health Association Nomination Form for: Dedicated Service Award

About the award: *This recognition is awarded to Long-term members who are retiring this year. Candidates may be nominated by any member of NCAEHA.*

Eligibility: *to be eligible a nominee must be*

- 1. An Environmental Health Professional that is approaching retirement within the next year.*
- 2. A member in good standing of NCAEHA for a minimum of 2 years.*
- 3. Actively engaged in the field of environmental health.*
- 4. Have performed professional duties in the field of environmental health above and beyond the usual employment requirements so as to elevate the professional status of the Environmental Health Professional.*

NOMINATED BY:

Name: _____

Job Title: _____

Phone: _____

E-Mail: _____

NOMINEE:

Name: _____

Job Title: _____

Retirement Date and Years of Service: _____

Employer: _____

E-Mail: _____

Please attach a brief (one page or less) explanation of the reasons you believe that the above named individual should be selected as this year's Dedicated Service Award recipient.

THE NOMINATION COMMITTEE MAY CONTACT YOU FOR ADDITIONAL INFORMATION.

Nominations may be sent either by postal service or email to
NCAEHA and must be received by **May 28, 2024**.

Send complete nominations to: **NCAEHA.VP.Membership@gmail.com**



National Capital Area Environmental Health Association Nomination Form for: Environmental Health Innovation Award

About the award: *This award is presented to a NCAEHA member or organization for creating a new idea, practice or product that has had a positive impact on improving the environment or public health and quality of life. The purpose of this award is to recognize these individuals and to encourage others to search for creative solutions.*

Recognized for:

- A new idea
- A new practice
- A new product
- or similar

NOMINATED BY:

Name: _____

Job Title: _____

Phone: _____

E-Mail: _____

NOMINEE:

Name: _____

Job Title: _____

Employer: _____

Innovation: _____

Please attach a brief (one page or less) explanation of the reasons you believe that the above named individual should be selected as this year's **Environmental Health Innovation Award** recipient. Specifically describe how this person or team has impacted the environment or public health and quality of life through their new health innovation.

THE NOMINATION COMMITTEE MAY CONTACT YOU FOR ADDITIONAL INFORMATION.

Nominations may be sent either by postal service or email to
NCAEHA and must be received by **May 28, 202**.

Send complete nominations to: **NCAEHA.VP.Membership@gmail.com**



National Capital Area Environmental Health Association Nomination Form for: NCAEHA Industry Award

About the award: *This award is presented to a Company or Industry which has demonstrated support and has made a significant contribution to the field of environmental health and/or to NCAEHA.*

Eligibility: *Company or Industry must*

- *Be an employer of at least one current NCAEHA member(s) in good standing*
- *Have performed duties in the field of environmental health above and beyond the usual requirements so as to elevate the professional status of the profession and/or NCAEHA*
- *Exemplify the characteristics of excellence, leadership, organization and dedication to the environment*

NOMINATED BY:

Name: _____

Job Title: _____

Phone: _____

E-Mail: _____

NOMINEE:

Company/Industry: _____

Region (if applicable): _____

Phone: _____

Email: _____

Please attach a brief (one page or less) explanation of the reasons you believe that the above named company should be selected as this year's NCAEHA Industry Award recipient. Specifically describe how this company has significantly contributed to the field of environmental health and/or to NCAEHA.

THE NOMINATION COMMITTEE MAY CONTACT YOU FOR ADDITIONAL INFORMATION.

Nominations may be sent either by postal service or email to
NCAEHA and must be received by **May 28, 2024**.

Send complete nominations to: **NCAEHA.VP.Membership@gmail.com**