HACCP Understanding Hazard Analysis and Critical Control Point – Quick Tips

Introduction

If you work in the U.S. food industry, it's important to have a clear understanding of the food safety system known as hazard analysis and critical control point (HACCP). The concepts of HACCP date back over fifty years. Simply put, HACCP is a science-based system used to ensure that food safety hazards are controlled to prevent unsafe food from reaching consumers. The Pillsbury Company first implemented this approach in collaboration with the National Aeronautics and Space Administration (NASA) during the development of food to be used in the U.S. space program.

Since then, numerous U.S. food companies have incorporated the system into their manufacturing processes. HACCP is required by the United States Department of Agriculture (USDA) for processing meat and poultry (9 Code of Federal Regulations (CFR) Part 417); it's also required by the Food and Drug Administration (FDA) for juice (21 CFR Part 120) and seafood (21 CFR Part 123) processors.

In 2011, the FDA passed the *Food Safety Modernization Act* (FSMA) (21 CFR Part 117) that regulates all other food manufactures who were not required to follow HACCP. These other food manufactures must now follow a close offshoot of HACCP called hazard analysis and risk-based preventive control (HARPC). This means that now, all U.S. food manufacturers regulated by the USDA and FDA are required to have proactive rather than reactive food contamination control measures in place.

The FDA is urging that HACCP principles be applied to retail and food service sectors of the food industry as well.

Why hazard analysis and critical control point is important

Before the HACCP, food inspection relied on the senses (sight,

smell and touch) to detect potential hazards. Guidelines were developed in the 1930s when the threat of physical contaminants and diseased animals were of great concern. However, the "process" of relying on senses failed to prevent hazards from occurring. Today, the challenges facing the food industry are predominantly microbiological and chemical in nature. Of the two, microbiological contaminants such as Salmonella, Clostridium botulinum, Listeria, Campylobacter and Escherichia coli O157:H7 pose the most significant threat. Since microbes cannot be detected by sight, a system that prevents the growth and spread of these organisms is required. Additionally, with the growth of the food industry; the increasing variety of products; and the number of processes used; federal, state and local agencies are continuously challenged to ensure food safety. HACCP places the responsibility for food safety on the processing plants, allowing them to develop a program that addresses their specific applications.

Fundamentals of HACCP

For HACCP to be most effective, its principles must be applied to all aspects of the food industry including growing, harvesting, processing, manufacturing, distributing, merchandising and preparing food for consumption. A successful HACCP program requires a strong management commitment to implement the principles. This management commitment provides employees with a clear understanding of the importance in producing safe food.

Prerequisites

HACCP must build upon a solid foundation of pre-existing programs for it to be successful. These programs provide the basic framework necessary for the production of safe food products. The National Advisory Committee on Microbiological Criteria for Foods states that programs such as current Good Manufacturing Practices (cGMP), personal hygiene, supplier control and cleaning/sanitation are critical in the development and implementation of an effective HACCP plan. Many of these programs and practices are outlined in federal, state and local regulations and guidelines.

Details of hazard analysis and critical control point

The concept of HACCP is relatively simple; however, application of the program can be challenging. HACCP is based upon seven basic principles.

- Conduct a hazard analysis
- Identification of Critical Control Points(CCP)
- Establishment of Critical Limits
- Monitoring of CCPs
- Application of Corrective Actions
- Documentation of the System
- Verification Procedures

(Specifics regarding these seven principles are mentioned later in this document.)

Prior to applying a HACCP plan to a specific product and process, five tasks must be accomplished:

- Establish a team of individuals with detailed knowledge and experience of the process to be analyzed.
- Describe the food involved and its distribution.
- Categorize the intended use and consumers of the food.
- Establish a flow diagram for the process outlining the steps involved (a simple block diagram is sufficient).
- Verify the flow diagram through on-site inspection of the operation.

Once these preliminary tasks have been completed, implementation of the HACCP principles can take place. The following is an overview of the seven HACCP principles. Please consult the references at the end of this document for additional information.

- **Conduct a Hazard Analysis**
  Identify potential food-related hazards and suggest appropriate control measures. A hazard is any biological (e.g., bacterium), chemical (e.g., toxin) or physical contaminant (e.g., broken glass) that could cause illness or injury if not properly controlled. During this step it is important to review the entire flow process of an item from

receipt, storage and preparation to its final distribution. After a thorough review is conducted and the potential hazards are identified, a list of control measures should be generated. Control measures are actions or activities that will prevent, eliminate or reduce the hazard. A detailed study of process hazards is critical for successful implementation of an effective HACCP plan.

- **Identify Critical Control Point**
  A critical control point (CCP) is defined as a point, procedure or step at which a food safety hazard could be eliminated, prevented or reduced. Examples of CCPs include testing for metal fragments, conducting thermal processing, preventing cross-contamination of microbes between different foods, chilling and testing for chemical residues. CCPs should be carefully developed and documented. Initially, there is a tendency to identify an excessive number of steps or procedures as CCPs thereby making the process unwieldy and less effective.
  Some questions to ask when developing CCPs are:
    - Can the CCP be monitored?
    - How will the CCP be documented or recorded?

Thorough analysis and identification of CCPs by knowledgeable professionals is fundamental in controlling food safety hazards.

- **Establish Critical Limits**
  Preventative measures with critical limits are established for each control point. Critical limits are maximum and/or minimum values that will prevent, eliminate or reduce a biological, chemical or physical hazard. A CCP will have at least one and possibly several control measures to achieve this goal. Critical limits or standards must be scientifically based and readily monitored. Examples of critical limits include time, temperature, pH, water activity, moisture and titratable (means of measuring) acidity. Potential sources for establishing critical limits are regulatory standards and guidelines, demonstrated results and expert consultants. An example of a critical

limit is the control of time and temperature in the cooking of hamburger patties to destroy enteric pathogens such as E. coli O157:H7.

- **Monitor the Critical Control Points**
  Established monitoring is a planned sequence of observations or measurements used to determine whether or not a CCP is under control. Ideally, monitoring should be continuous to assure accurate readings. In addition, most monitoring procedures require near-immediate results so that loss of control or deviations can be observed instantly. Tests related to microbiological observations are usually not practical due to the lag-time in producing results; chemical and physical measurements are frequently preferred because their results are achieved quickly and are generally more effective for assuring control of microbiological hazards. However, in some applications there may be no substitute for microbiological testing. Potential methods for monitoring CCPs include time and temperature recordings, pH measurements and observation of the procedure by sight or smell. Another important component of this step is to record and log the measurements, establishing a written record for later use in verification. The individual(s) chosen for monitoring should understand the purpose and significance of monitoring; be adequately trained in the monitoring procedure; be unbiased in their duties and reporting; and accurately report the monitoring data.
- **Define Corrective Action(s)**
  Prior to enforcing a HACCP plan, corrective actions should be established for each CCP. Unfortunately, deviations will likely occur and an individual must be empowered to prevent possible hazardous foods from reaching consumers. When a deviation is noted from established critical limits, immediate and documented corrective actions are crucial. Corrective actions should determine and correct the cause of deviation and establish whether a food product should be discarded. In addition, the actions taken to restore the procedure to compliance should be documented. Examples of corrective actions include adjusting thermostats for proper

temperature control, reheating or re-cooking a product and discarding a product that is deemed to potentially pose a health hazard.

- **Establish Record-Keeping and Documentation Procedures**
  Maintaining records of the HACCP plan is necessary to ensure that critical limits are working and being monitored. Documentation should be kept for the entire food process. These records should include a summary of the hazard analysis, a detailed listing of the HACCP plan, verification records and any documentation generated during the HACCP plan operation. The records associated with this process should be kept on file at the establishment and easily accessible.
- **Establish Verification Procedures**
  Verification activities determine the effectiveness of the HACCP plan and ensure the system is operating correctly. One of the most important aspects of this principle is the initial validation that the HACCP plan is scientifically and technically reliable. Using the verification procedures, an establishment should conduct frequent review of the HACCP plan and its components. In addition to in-house reviews, periodic verification by an independent expert or team should be performed. If deficiencies are noted during the verification step (in-house or independent), the HACCP plan must be modified to correct the problem(s).

Conclusion

HACCP is a proactive plan developed to prevent and reduce the incidents of food safety hazards. By monitoring and detecting potential problems throughout an entire process, identification of hazards and application of corrective measures can be implemented immediately. HACCP enables companies to apply prevention and detection methods to their specific application(s), giving them the freedom to adopt new techniques and technologies more rapidly. A successful HACCP plan is built upon a firm commitment from upper management with well-trained and motivated employees actively involved in the process. Under HACCP, responsibility for ensuring food safety is now appropriately placed on the food manufacturer

or distributor. Adoption of this plan will result in the reduced likelihood of hazards and assure consumers that the products they consume are as safe as science and technology allow.

Frequently Asked Questions

Q: What is the difference between a control measure, a critical control point and a critical limit?

A: A control measure is an action or procedure that will reduce, prevent or eliminate a potential hazard. A critical control point is a step at which a control measure is applied. A critical limit is a maximum and/or minimum value for controlling a chemical, biological or physical parameter.

Q: What is the greatest hazard in the food industry today?

A: Microbiological contamination is the chief hazard in the food industry. However, chemical and physical hazards should not be overlooked.

Q: Does end-product testing of bacteria play a role in HACCP?

A: Testing for microbes can play a valuable role in confirming the HACCP system is working properly. Testing is also useful in profiling and tracking products and processes. However, testing for microbes at the end of a process is not effective in identifying and eliminating contamination.

Sources

National Advisory Committee on Microbiological Criteria for Foods, HACCP Principles & Application Guidelines
U.S. Department of Agriculture Food Safety and Inspection Service (FSIS)
U.S. Food and Drug Administration International
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Battery Boosting Meeting Kit – Spanish

QUÉ ESTÁ EN RIESGO

¿ES SENCILLO CARGAR LA BATERÍA?

Si una batería no se cuida adecuadamente, no se utiliza durante mucho tiempo o se acerca al final de su vida útil, puede debilitarse y perder su carga.

CUÁL ES EL PELIGRO

PELIGROS DE LA CARGA DE LA BATERÍA

Una carga de batería inadecuada puede provocar lesiones graves si se hace de forma incorrecta. Las baterías suelen explotar cuando se cargan de forma incorrecta, lo que hace que los trabajadores se expongan al riesgo de quemaduras por ácido y a lesiones por objetos voladores.

La siguiente composición y constitución de las baterías explica por qué el refuerzo de estas es más de lo que “parece”.

1. Las baterías de plomo-ácido se construyen con varias celdas individuales que contienen capas de placas de plomo sumergidas en ácido sulfúrico. Cuando el ácido sulfúrico entra en contacto con la placa de plomo, se produce energía. La batería tendrá un terminal negativo y otro positivo en la parte superior o lateral de la batería y tendrá tapas de ventilación en la parte superior. El propósito de las tapas de ventilación es permitir el escape de los gases que se forman cuando la batería se está cargando. Además, los tapones de ventilación permiten comprobar los niveles de agua y ácido de la batería durante el mantenimiento.
2. Las baterías de plomo-ácido pueden producir mezclas explosivas de gases de hidrógeno y oxígeno cuando se están cargando. Si la ventilación es deficiente, el hidrógeno que se escapa crea una atmósfera explosiva alrededor de la batería. Mantenga siempre las chispas, las llamas, los cigarrillos encendidos y otras fuentes de ignición lejos de la zona del puente para la batería, ya que el gas puede inflamarse. El resultado de una explosión podría ser quemaduras graves y/o un incendio.

COMO PROTEGERSE

FUNCIÓN DE ASISTENCIA EN CARRETERA

Si la batería de su vehículo se ha agotado, lo mejor es llamar a un Servicio de Asistencia en Carretera, cuyos expertos pueden asesorarle sobre el procedimiento a seguir.

PASOS POR SEGUIR EN LA CARGA DE LA BATERÍA

1. Para hacer un puente de arranque con una batería descargada a partir de una batería buena (donante), estacione ambos vehículos cerca uno del otro, pero sin que se toquen. No tenga el vehículo donante en marcha durante este proceso porque podría causar daños eléctricos si se produce una sobrecarga eléctrica mientras los cables están conectados. Más vale prevenir que lamentar.
2. Abra los capós y localice los terminales de la batería, que

a menudo están encerrados por una cubierta de plástico. Abra la tapa para exponer los terminales y limpie el exceso de corrosión con un trapo. No intente hacer un puente con una batería dañada o con fugas, ya que podría provocar una chispa o un incendio. En los vehículos con una batería situada en el maletero, debajo de un asiento, o que utiliza terminales de batería laterales, debería encontrar una cubierta de plástico roja etiquetada como positivo (+) en el compartimento del motor. Esto está ahí para que usted haga la conexión positiva de la batería.

Cables conectados al vehículo para hacer un puente

1. Utilice cables de refuerzo de alta resistencia de calibre 2 (lo mejor) o 4 para conectar las baterías en el siguiente orden. En primer lugar, conecte la pinza del cable positivo (rojo) al borne positivo de la batería descargada. A continuación, conecte la otra pinza positiva al terminal positivo de la batería buena.

A continuación, en la batería buena, conecte la pinza negativa (negra) al terminal negativo (-) de la batería. Por último, conecte la otra pinza negativa a una parte metálica desnuda del bloque del motor en el vehículo muerto. Algunos vehículos incluso tienen puntos de tierra negativos (-) designados en el compartimento del motor.

Asegúrese de hacer esta última conexión lo más lejos posible de la batería porque una batería muerta emitirá gas hidrógeno que podría encenderse si hay un deslizamiento con las pinzas causando una chispa. Tenga en cuenta también las piezas móviles del compartimento del motor (como las correas) para asegurarse de que los cables y las abrazaderas del reforzador están libres y sin obstáculos. Para su protección, asegúrese de usar gafas de seguridad o una máscara facial y guantes al hacer las conexiones.

1. Ahora que ha completado el circuito conectado, espere unos minutos para que el voltaje se transfiera de la batería buena a la descargada, y luego póngalo en marcha con todas las luces accesorias y características de potencia apagadas

para minimizar la carga de energía. Una vez que el vehículo esté en marcha, desconecte los cables del reforzador en el orden inverso: negativo del vehículo reforzado, negativo del vehículo auxiliar, positivo del vehículo auxiliar, positivo del vehículo reforzado.

2. Deje que el vehículo reforzado funcione durante al menos diez minutos para cargar parcialmente la batería antes de salir. Si el vehículo no se reinicia por sí solo después de un largo viaje, haga que un mecánico revise la batería, el alternador y el sistema eléctrico.

RECORDATORIOS/CONSEJOS SOBRE LA CARGA DE LA BATERÍA

Antes de colocar los cables de puente, asegúrese de mantener siempre las chispas, las llamas y los cigarrillos alejados de las baterías. Asegúrese de que los vehículos no se tocan y ponga los frenos de estacionamiento de ambos vehículos. Coloque las transmisiones automáticas en el modo de estacionamiento y las transmisiones manuales en el modo neutro. Apaga ambos motores y añade agua a la batería si es necesario. No haga un puente si el líquido de la batería está congelado o si las baterías de ambos vehículos no tienen el mismo voltaje.

Todas las personas que trabajen con baterías de vehículos o estén cerca deben llevar gafas protectoras. Pueden evitar que los fragmentos de la batería que salen despedidos y los productos químicos entren en contacto con los ojos. En muchas ferreterías se pueden comprar gafas de seguridad baratas.

Si el ácido de la batería entra en los ojos, lávelos inmediatamente con agua durante 15 minutos, manteniendo los párpados abiertos. A continuación, busque atención médica sin demora.

A la hora de elegir los cables de la batería, éstos deben tener una longitud mínima de 3 metros, ser de gran calibre, estar bien aislados, tener pinzas de cocodrilo afiladas y limpias y estar codificados por colores para evitar conexiones erróneas.

CONCLUSIÓN

La carga de la batería es muy común, sobre todo en los climas del Norte. Sin embargo, a menudo se subestiman los peligros asociados a la carga de la batería. Esto da lugar a muchas lesiones que podrían haberse evitado con una capacitación adecuada.

Battery Boosting Meeting Kit

IS BATTERY BOOSTING SIMPLE?

If a battery is not cared for properly, not used for a long time or is nearing the end of its useful life expectancy, then it can

become weak and lose its charge.

BATTERY BOOSTING DANGERS

Improper battery boosting can lead to serious injury if done improperly. Batteries commonly explode when improperly boosted, leading to worker exposure to risk of acid burns and injuries from flying objects.

The following composition and make-up of batteries explains why battery boosting is more than what “meets the eye”.

1. Lead-acid batteries are built with a number of individual cells containing layers of lead plates immersed in sulphuric acid. When the sulphuric acid comes into contact with the lead plate, energy is produced. The battery will have a negative and a positive terminal on the top or side of the battery, and will have vent caps on top. The purpose of the vent caps is to allow for the escape of gases formed when the battery is charging. In addition, the vent caps allow water and acid levels of the battery to be checked during maintenance.
2. Lead-acid batteries can produce explosive mixtures of hydrogen and oxygen gases when they are being charged. If ventilation is poor, the escaping hydrogen creates an explosive atmosphere around the battery. Always keep sparks, flames, burning cigarettes, and other sources of ignition away from the battery recharging area because the gas can be ignited. The result of an explosion could be severe burns and/or fire.

ROADSIDE ASSISTANCE ROLE

If your car battery is dead, the best thing to do is call a Roadside Assistance Service, whose experts can advise you on the procedure to follow.

STEPS TO FOLLOW IN A BATTERY BOOST

1. To jump start a discharged battery from a good (donor) battery, park both vehicles close to each other but not touching. Do not have the donor vehicle running during this process because it could cause electrical damage if there is an electrical surge while the cables are connected. Better safe than sorry.
2. Open the hoods and locate the battery terminals, which are often enclosed by a plastic cover. Open the cover to expose the terminals and wipe off any excess corrosion with a rag. Do not attempt to jump start a damaged or leaking battery as this could cause a spark or fire. On vehicles with a battery located in the trunk, under a seat, or use side battery terminals, you should find a red plastic cover labeled as positive (+) in the engine compartment. This is there for you to make the positive booster connection.

Cables attached to the car for a jump start

1. Use heavy duty 2 gauge (best) or 4 gauge booster cables to connect the batteries in the following order. First start by connecting the positive (red) cable clamp to the positive terminal on the dead battery. Next connect the other positive clamp to the positive terminal on the good battery.

Next while at the good battery, connect the negative (black) clamp to the negative (-) battery terminal. Finally, connect the other negative clamp to a bare metal part of the engine block on the dead car. Some vehicles even have designated negative (-) ground spots in the engine bay.

Be sure to make this last connection as far away from the battery as possible because a dead battery will emit hydrogen gas that could ignite if there is a slip with the clamps causing a spark. Also be aware of moving parts in the engine bay (such as belts) to ensure that the booster cables and clamps are clear and unobstructed. For your protection, be sure to wear safety goggles or a face mask and gloves when making the connections.

1. Now that you've completed the connected circuit, wait a few minutes for the voltage to transfer from the good battery to the discharged, then start it up with all of the accessory lights and power features turned off to minimize the power load. Once the vehicle is running, disconnect the booster cables in the reverse order: negative off the boosted car, negative off the helper car, positive off the helper car, positive off the boosted car.
2. Allow the boosted car to run for at least ten minutes to partially charge the battery before driving off. If the car does not restart on it's own after going for a lengthy drive then have your battery, alternator and electrical system checked by a mechanic.

BATTERY BOOSTER REMINDERS/TIPS

Before attaching the jumper cables, be sure to keep sparks, flames, and cigarettes away from batteries at all times. Make sure the cars don't touch and set both cars' parking brakes. Place automatic transmissions in Park and manual transmissions in neutral. Turn both ignitions off and add battery water if needed. Don't jump start a car if battery fluid is frozen or if the batteries of both cars are not the same voltage.

Protective goggles should be worn by everyone working with car batteries or standing nearby. They can keep flying battery fragments and chemicals out of the eyes. Inexpensive safety eyewear can be purchased at many hardware stores.

Should battery acid get into the eyes, immediately flush them with water continuously for 15 minutes, holding the eyelids open. Then seek medical attention without delay.

When selecting battery cables, they should be at least 12 feet in length, heavy gauge wire, well-insulated, have sharp and clean alligator clips and be color-coded to avoid wrong connections.

FINAL WORD

Battery boosting is very common particularly in northern climates. But the dangers associated with battery boosting is often underappreciated. This results in many injuries that could have been prevent with proper training.

Battery Boosting Stats and Facts – Spanish

HECHOS

1. Un error al cargar la batería de los vehículos modernos puede tener a veces consecuencias nefastas. En el mejor de los casos, podría freír el sistema informático de su vehículo y, en el peor, podría provocar una explosión de la batería, lo que provocaría lesiones graves o incluso la muerte.
2. Hoy en día, cuando los expertos dan un impulso a los vehículos, llevan gafas de seguridad, guantes de seguridad y monos de protección.
3. El riesgo de explosión está etiquetado en cada batería de automóvil, aunque pocos automovilistas se molestan en leer esas advertencias, y mucho menos en tomarlas en serio.
4. El ácido de la batería puede dañar gravemente el compartimento del motor, corroyendo cables y mangueras, además de dañar la pintura.
5. El peligro es que el hidrógeno explote si se produce una chispa cerca. Una fuente de chispas puede ser la propia batería.
6. La causa más común de las explosiones de la batería en el momento del arranque son los postes y cables de la batería sucios.
7. Otra de las causas principales de las explosiones es hacer un puente inadecuado. El error que cometen muchos automovilistas es conectar los cables de puente a la batería buena de otro vehículo y luego a la batería muerta, una práctica que provoca chispas.

ESTADÍSTICAS

- Los automovilistas pueden resultar gravemente heridos por la explosión de una batería. En Estados Unidos, una investigación de la Asociación Nacional de Seguridad del Tráfico en Carretera estimó que unas 442 personas resultaron heridas por la explosión de baterías al intentar hacer un puente.
- Se obtuvieron de NEISS 134 casos de lesiones asociadas a

baterías de vehículos de motor. Sobre la base de estos 134 casos, se estima que 7.051 personas fueron tratadas en las salas de emergencia de los hospitales por lesiones resultantes de una actividad relacionada con las baterías de vehículos de motor en todo el país.

- Se estima que 2.280 personas (el 32% de las 7.051 lesiones por baterías de vehículos de motor) resultaron heridas como consecuencia directa de la explosión de una batería de vehículo de motor.
- El 31% de las personas heridas por explosiones de baterías estaban cargando la batería (702 personas heridas).
- Más de una cuarta parte (26%) de las lesiones estaban asociadas a una actividad relacionada con los cables de la batería (sustitución, fijación o apriete).
- Un número casi igual de personas resultaron heridas al "hacer un puente" con la batería (19%) o al comprobar/añadir líquido (19%).
- La mayoría (62%) de las 2.280 personas que se calcula que resultaron heridas por explosiones de baterías de vehículos de motor fueron diagnosticadas con quemaduras químicas.
- Al 21% de los heridos se les diagnosticaron laceraciones. Casi tres cuartas partes (72%) de los heridos sufrieron una lesión ocular.

Battery Boosting Stats and Facts

FACTS

1. An error when boosting the battery of modern cars can sometimes have dire consequences. At best, you could fry your car's computer system and at worst, you could cause a

battery explosion, leading to serious injury or even death.
2. Today, when experts give cars a boost, they wear safety googles, safety gloves, and protective overalls.
3. The risk of explosion is labeled on every automotive battery, though few motorists bother to read such warnings, let alone take them seriously.
4. Battery acid can severely damage the engine compartment, eating away wires and hoses as well as damaging paint.
5. The danger is that hydrogen will explode if a spark occurs nearby. One source of sparks can be the battery itself.
6. The most common cause of battery explosions upon start-up is dirty battery posts and cables.
7. Improper jump-starting is another leading cause of explosions. The mistake many motorists make is to connect the jumper cables to another car's good battery and then to the dead battery, a practice that causes sparking.

STATS

- Motorists can be severely injured by a battery explosion. In the United States, a research note by the National Highway Traffic Safety Association estimated that about 442 persons were injured by exploding batteries while attempting a jump-start.
- 134 cases of injuries associated with motor vehicle batteries were obtained from NEISS. Based upon these 134 cases, an estimated 7,051 persons were treated in hospital emergency rooms for injuries resulting from an activity involving motor vehicle batteries nationwide.
- An estimated 2,280 persons (32% of 7,051 motor vehicle battery injuries) were injured as a direct result of a motor vehicle battery explosion.
- Thirty-one percent (31%) of the persons injured by battery explosions were charging the battery (702 persons injured).
- More than one-fourth (26%) of the injuries were associated with an activity involving the battery cables (replacing, securing, or tightening).
- An almost equal number of persons were injured as a result

of “jump starting” the battery (19%) or checking/adding fluid (19%).
- The majority (62%) of the 2,280 persons estimated to have been injured by motor vehicle battery explosions were diagnosed as having chemical burns.
- Twenty one percent (21%) of the persons injured were diagnosed with lacerations. Almost three-fourths (72%) of those injured suffered an eye.

Battery Boosting Fatality File – Spanish

Un hombre de Texas y su perro mueren tras quedar atrapados en un Corvette

No pudo salir de su Corvette cerrado, según la policía.

La policía cree que cuando James Rogers se metió en el vehículo, un cable se soltó y cortó la corriente para hacer funcionar el claxon y las cerraduras. Rogers no sabía cómo desbloquear manualmente el vehículo y quedó atrapado dentro, según el Departamento de Policía de Port Arthur.

La policía cree que el agotamiento por calor acabó matando a los dos, mientras estaban sentados en el aparcamiento de un Waffle House en Port Arthur.

Mike Flash, el propietario de Corvette Specialties, dijo a 12News que el Corvette 2007 tiene una liberación manual situada en el tablero del suelo junto al asiento del conductor. Pero Rogers no lo sabía.

Los primeros en responder también lucharon para encontrar una

manera de sacar a Rogers del vehículo, dijo M.J. Ponsegrau, que estaba en la escena.

Ponsegrau dijo que finalmente los bomberos tuvieron que romper la ventana.

“Hay una manera de entrar, pero no es de conocimiento común”, dijo.

La hija de James Rogers, Tricia Hernández, dijo que es desgarrador que el vehículo de sus sueños haya acabado con su vida. Hernández dijo que la policía cree que su padre hizo un valiente esfuerzo por escapar y posiblemente murió mientras miraba el manual del vehículo. No pudo pedir ayuda porque había dejado su teléfono dentro de Waffle House.

Por extraño que parezca el accidente, no es aislado.

Isabel Moreno dijo a los periodistas que tenía un Corvette de 2006 y que se quedó atrapada en su interior cuando se agotó la batería.

Afortunadamente, dijo que finalmente la batería empezó a recargarse lo suficiente como para poder bajar la ventanilla y pudo salir sana y salva.

Battery Boosting Fatality File

Texas man, dog die after being trapped in Corvette

Standing unable to get out of his locked Corvette, according to police.

Police believe that when James Rogers got into the vehicle, a cable became loose and cut off the power to the operate the horn

and locks. Rogers did not know how to manually unlock the vehicle and became trapped inside, according to the Port Arthur Police Department.

Police believe heat exhaustion eventually killed the two, as they sat in the parking lot of a Waffle House in Port Arthur.

Mike Flash, the owner of Corvette Specialties, told 12News that the 2007 Corvette has a manual release located on the floorboard by the driver's seat. But Rogers did not know that.

First responders also struggled to find a way to get Rogers out of the car, said M.J. Ponsegrau, who was at the scene.

Ponsegrau said eventually firefighters had to break the window.

"There's is a way to get in, but it's not common knowledge," he said.

James Rogers', daughter Tricia Hernandez, said it's heartbreaking that his dream car ended up taking his life. Hernandez said police believe her dad made a valiant effort to escape and possibly died while looking through the car's manual. He could not call for help because he had left his phone inside Waffle House.

As strange as the accident seems, it's not isolated.

Isabel Moreno told reporters he owned a 2006 Corvette and was trapped inside when the battery went out.

Fortunately, he said eventually the battery started recharging itself enough to be able to roll the window down, and he was able to get out safely.

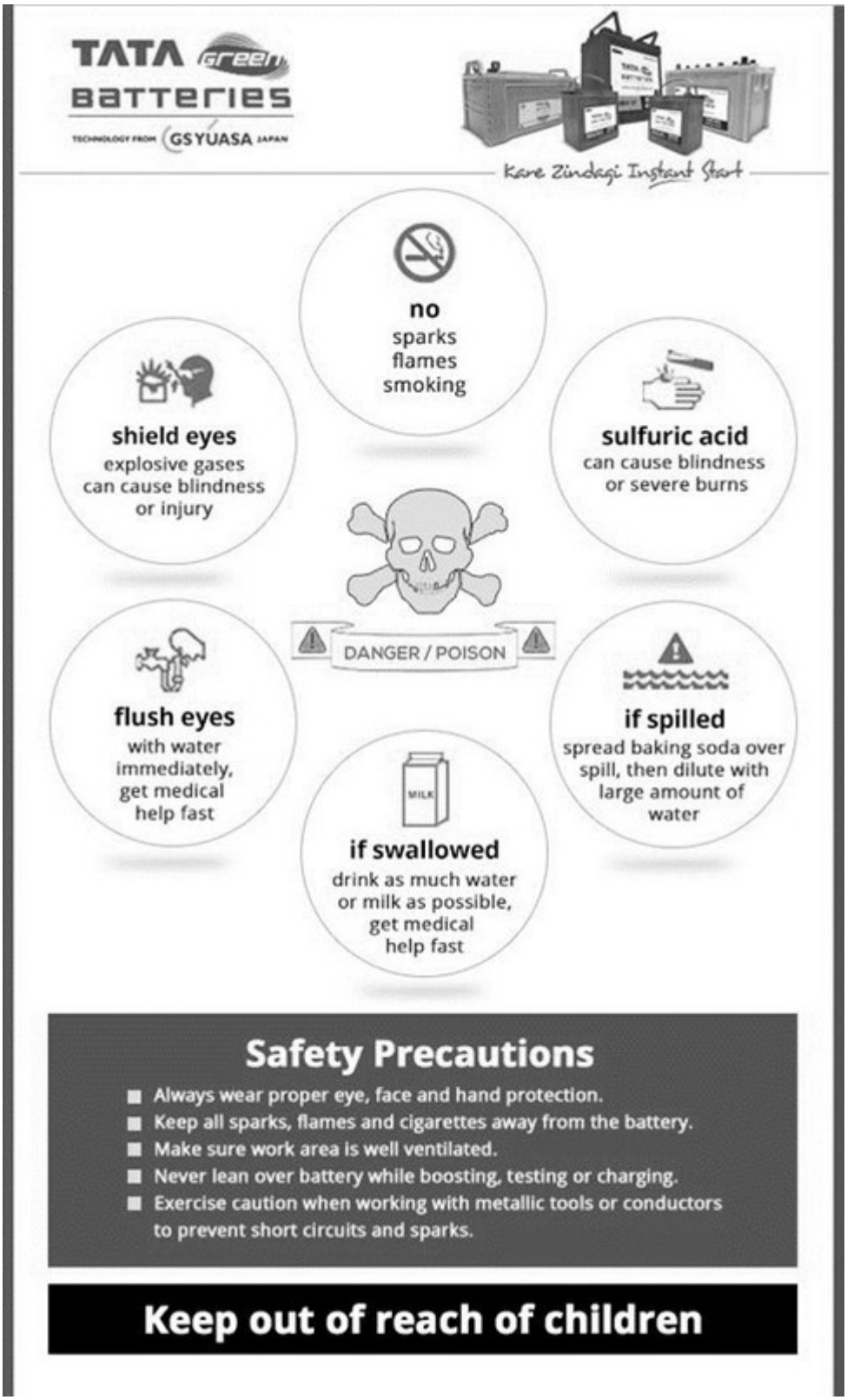
Source:https://www.usatoday.com/story/news/nation-now/2015/06/11/texas-man-dog-die-trapped-corvette/71053474/

Valley Fever Awareness

Course Description

Valley fever is a disease caused by a fungus that gets into your body through your lungs. This course will review what valley fever is, where it occurs, symptoms and treatment.

Battery Boosting Picture This



Source: ***https://i.pinimg.com***

Battery Boosting Picture This – Spanish



Fuente: ***https://www.fullkeys.cl/***

Valuing Diversity at Work – Spanish

Course Description

La verdadera inclusión sólo puede existir cuando las personas en el lugar de trabajo se sienten libres de ser ellas mismas. Las opiniones, habilidades y contribuciones de todos no sólo deben ser toleradas, sino también valoradas para que todos los empleados

tengan la oportunidad de maximizar su potencial. Este curso tratará de la importancia de la diversidad en su lugar de trabajo.

Quick Course – An Injury Free Office

An injury-free office helps your workplace run smoothly. This quick course will cover some common hazards in office settings and how to avoid them.

Electric and Magnetic Fields – Quick Tips

Electric and magnetic fields (EMF) are invisible lines of force that surround any electrical device. Electrical wiring, electrical equipment and power lines all produce electric and magnetic fields. Electrical fields and magnetic fields can be characterized by their wavelength, frequency and amplitude (strength). The wavelength describes the distance between the peak of one wave to the peak of the next wave. Frequency is the number of wave cycles per second measured in Hertz (Hz). Electricity in the United States alternates or changes direction at 60 cycles per second or 60 Hz. In many other parts of the world the frequency of electric power is 50 Hz. If equipment uses batteries, the current flows in only one direction and is referred to as direct current. Direct current produces a static or stationary magnetic field which would be 0 Hz.

The term EMF can describe electromagnetic fields with high or low

frequencies. In general, when you see EMF, it usually refers to electric and magnetic fields at extremely low frequencies (ELF) such as those associated with the use of electrical power. This focuses primarily with electric and magnetic fields in the low frequency range, primarily 50 or 60 Hz which is produced by the generation, transmission and use of electricity.

Electric Fields

Electric fields are produced by voltage and increase as the voltage increases. The strength of the electric field is measured in units of volts per meter (V/m). Electric fields often are present even if the equipment is turned off, as long as it remains connected to the power source. Electric fields decrease rapidly the further you get from the source. They are also shielded or weakened as they pass through buildings, trees, clothes etc.

Magnetic Fields

The magnetic fields result from the flow of current through wires or electrical devices and increase in strength as the current increases. Magnetic fields are measured in units of Gauss (G) or Tesla (T). Gauss is most commonly used in the United States and Telsa is the internationally accepted term. Unlike an electric field, a magnetic field is only produced when the current is flowing. Magnetic fields also decrease rapidly the further you get from the source but are not as easily shielded as electrical fields; magnetic fields tend to pass through most materials which is why they tend to be more of a concern.

Health Effects of Electric and Magnetic Fields

Reported symptoms from the general public to electric and magnetic field exposure include headaches, anxiety, depression, nausea and fatigue. To date, scientific evidence does not support a link between these symptoms and exposure to electric and magnetic fields. The most recent research has been focused on magnetic fields because some epidemiological studies have suggested an increased risk of cancer with exposure to magnetic fields while no similar associations have been reported for electric fields.

Although there is some weak scientific evidence to suggest a link between electric and magnetic fields and cancer, at this time, there have been no confirmed links between EMF exposure and an increase risk of cancer, leukemia or other non-cancer related disease.

Electric and Magnetic Field Exposure Standards

Currently there are no federal standards that limit occupational or residential exposure to 60 Hz EMF. Several states have standards for electric fields on transmission lines and a few have standards for magnetic fields. Some states further limit electric field strength at road crossing to ensure that electric current induced into large metal object like trucks and buses does not represent an electric shock hazard. Personal exposure limits as low as 1–3mG have been suggested by manufacturers of electric and magnetic field meters and different organizations have developed their own exposure guidelines which are 10 Gauss or higher. Since there isn't consistency in recommended exposure levels, common sense would dictate that a practice of minimal exposure be exercised whenever possible.

Measuring Electric and Magnetic Fields

Many manufacturers make instruments for measuring electric and magnetic fields. Most of the instruments that are called EMF meters may only be capable of measuring magnetic fields and not electrical fields; this is because most of the health concerns seem to come from the magnetic fields. Check the measuring ranges to see what frequencies the instrument is capable of measuring. The entry level meters that measure magnetic fields are usually single axis meters. Since magnetic fields are oriented in space, a single axis meter only has one sensor and will need to be rotated in space until you get the highest reading. A triple axis meter has 3 sensors at right angles. This type of meter does not require rotation to get the correct readings.

Click here for an EMF tester.

Frequently Asked Questions

Q: Do electric and magnetic fields affect pacemakers?

A: According to the U.S. FDA, interference from electric and magnetic fields can affect various medical devices including cardiac pacemakers and implantable defibrillators. Check with the manufacturer of these specific devices for their limitations.

Q: Are cell phones and towers sources of electric and magnetic field exposure?

A: These items involve radio-frequency and microwave-frequency electromagnetic fields. These are a much higher frequency than power generation electric and magnetic fields. At radio and microwave frequencies, electric and magnetic fields are considered together as the two components of an electromagnetic wave. Power density, measured in watts per square meter (W/m^2), describes the intensity of these fields. These items are regulated by the Federal Communications Commission (FCC) to ensure compliance with exposure standards. These types of items cannot be measured by most EMF meters because they are outside of the frequency range of the meters. There are EMF meters available for this application just make sure to check the application and frequency range of the instrument before you purchase.

Q: How do I convert between Gauss and Tesla?

A: 1 Tesla = 10,000 Gauss
1 Milligauss is 1/1000 of a Gauss
1 Microtesla is 1/1,000,000 of a Tesla

To convert from Microtesla to Milligauss, multiply by 10
1 Microtesla = 10 Milligauss and 0.1 Microtesla = 1 Milligauss

Q: How are EMF meters used in paranormal research?

A: There are many websites that specialize in these types of applications where you can obtain information, but generally for this application, EMF Meters are used to seek out unexplainable levels or changes in the natural magnetic field, hopefully providing credible evidence of paranormal activity.

Sources

www.lessemf.com
World Health Organization
NIOSH

The information contained in this article is intended for general information purposes only and is based on information available as of the initial date of publication. No representation is made that the information or references are complete or remain current. This article is not a substitute for review of current applicable government regulations, industry standards, or other standards specific to your business and/or activities and should not be construed as legal advice or opinion. Readers with specific questions should refer to the applicable standards or consult with an attorney.

Source: Grainger Know How – https://www.grainger.com/know-how

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Emergency Shower and Eyewash Station Requirements – Quick Tips

The Occupational Safety and Health Administration (OSHA) has two different types of regulations that address emergency shower and eyewash and eye/face wash station equipment needs. The first is a general requirement applicable to all facilities that require the installation of emergency shower or eye wash station equipment as a form of first aid [29 Code of Federal Regulations (CFR) 1910.151(c)]. The second type is specific to certain industries.

29 CFR 1910.151(c) states “Where the eyes or body of any person

may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use."

The industries referenced in the second type of OSHA regulations include: Activities Utilizing an Open Surface Tank; Storage and Handling of Anhydrous Ammonia; Powered Industrial Trucks; Pulp, Paper and Paperboard Manufacturing; Telecommunications; Formaldehyde Handling; Hazardous Materials; and Construction Industry.

Both regulation types specify where and when emergency eye wash and shower equipment must be available. Neither, however, specifies minimum selection, installation, operation or maintenance requirements. OSHA refers employers to the American National Standards Institute (ANSI) and the International Safety Equipment Association (ISEA) ANSI/ISEA Z358.1 American National Standard for Emergency Eyewash and Shower Equipment standard as a recognized source for such guidance.

ANSI/ISEA Z358.1 is a national consensus standard that helps users select, install, operate and maintain emergency eyewash, eye/face wash and shower equipment. It was issued in 1981 and revised in 1990, 1998, 2004, 2009, and again in 2014. This Standard is part of the building code in locations which have adopted the International Plumbing Code (IPC). The IPC is in use or adopted in 35 states, the District of Columbia, Guam and Puerto Rico.

Emergency Eyewash, Eye/Face Wash and Shower General Requirements

Installation / Location:

- Must be accessible within 10-seconds of hazard, approximately 55-feet (consult a medical professional to determine the appropriate distance for harsh acids and caustics; high hazard = closer distance)
- Must be located on the same level as the hazard
- Path of travel must be free of obstructions—Appendix B5

clarifies that a step into an enclosure where emergency equipment is located is not considered an obstruction
- Location must be well lit and identified with a highly visible sign
- If shut-off valves are installed in the supply line for maintenance purposes, provisions must be made to prevent unauthorized shut off

Temperature

- Must deliver tepid flushing fluid—suggested temperature range of 60–100°F

Maintenance and Inspection

- Activate plumbed units at least weekly to verify proper operation
- Visually check self-contained units weekly to determine if flushing fluid needs to be changed or supplemented
- Inspect annually for compliance with ANSI/ISEA Z358.1 performance requirements

Training

- Instruct all employees in the location and proper use

Shower Requirements
There are two types of emergency showers:

- **Plumbed Shower:** An emergency shower permanently connected to a continual source of potable water
- **Self-Contained Shower:** A stand-alone shower that contains its own flushing fluid

Key emergency shower features and specifications include:

- Hands-free valve activates in one second or less and remains open until manually closed
- Plumbed unit delivers 20 gallons of water per minute for 15 minutes at 30 pounds per square inch pressure in the required pattern
- Self-contained unit delivers 20 gallons of water per minute

for 15 minutes in the required pattern
- Height of water column is between 82 and 96-inches above the surface on which the user stands
- At 60 inches above the surface on which the user stands, the water pattern is at least 20 inches in diameter
- Center of the water pattern is at least 16 inches from any obstruction
- Easily located, accessible actuator is no more than 69 inches above the surface on which the user stands
- If provided, shower enclosure has a minimum diameter of 34 inches

Eyewash and Eye/Face Wash Station Requirements

There are two types of eyewash and eye/face wash stations:

- **Plumbed station:** An eye wash unit permanently connected to a continual source of potable water
- **Gravity-fed (self-contained) station:** A stand-alone eye wash device that contains its own flushing fluid that must be refilled or replaced after use

Key eyewash and eye/face wash station features and specifications include:

- Eyewash and eye/face wash controlled, low velocity flow rinses both eyes and is not injurious to user
- Water flow is sufficiently high to allow user to hold eyes open while rinsing
- Spray heads are protected from airborne contaminants – covers are removed by water flow
- Plumbed eyewash delivers at least 0.4 gallons of water per minute at 30 pounds per square inch pressure for 15 minutes
- Gravity-fed (self-contained) eyewash delivers at least 0.4 gallons of water per for 15 minutes
- Plumbed eye/face wash delivers at least 3.0 gallons of water per minute at 30 pounds per square inch pressure for 15 minutes
- Gravity-fed (self-contained) eye/face wash delivers at least 3.0 gallons of water per for 15 minutes

- Water flow pattern is positioned between 33 and 53 inches from the surface on which the user stands and at least 6-inches from the wall or nearest obstruction
- Valve actuator is easy to locate and readily accessible to user
- Unit washes both eyes simultaneously and covers area indicated on test gauge at no more than 8 inches above spray heads

Personal Eye Wash Requirements

A Personal Eye Wash is a supplementary eye wash that supports plumbed units, gravity-fed units or both by delivering immediate flushing fluid.

NOTE: Personal eye wash units do not meet the requirements of plumbed or self-contained eye wash equipment. Personal eye wash units can support plumbed or gravity-fed eye wash units but cannot be a substitute.

Drench Hose Requirements

A drench hose is a supplemental device consisting of a flexible hose connected to a flushing fluid that's used to irrigate and flush eyes, face and body areas. Plumbed and self-contained options are available. **NOTE: Drench hoses may be considered an eye wash or eye/face wash if the device meets the performance requirements discussed previously.**

Commonly Asked Questions

Q: What water temperature is required?

A: According to ANSI/ISEA Z358.1-2014, tepid is defined as a "flushing fluid temperature conducive to promoting a minimum 15-minute irrigation period. A suitable range is 60 to 100 °F." Medical recommendations suggest flushing fluid at tepid temperatures be delivered to affected chemically injured tissue. Temperatures in excess of 100 °F have proven to be harmful to the eyes. Cold flushing fluid does provide immediate cooling after chemical contact, but prolonged exposure to cold fluids can affect

the ability to maintain adequate body temperature. Information indicates that a temperature of 60 °F is suitable for the lower parameter for tepid flushing fluid without causing hypothermia to the user.

Q: Why is weekly activation for plumbed emergency eyewash and shower equipment suggested?

A: The intent of weekly activation is to ensure that there is flushing fluid supply at the head of the device, to clear the supply line of any sediment build-up that could prevent the flushing fluid from being delivered to the head of the device, and to minimize microbial contamination due to stagnant water. The activation duration depends on the volume of water contained in the unit itself and all sections of pipework that do not form part of a constant circulation system (i.e. “dead leg” portions). Water in these sections is stagnant until a flow is activated by opening a valve. The goal is to flush out stagnant water in the dead leg completely. Where mixing valves are used, both the hot water and cold water supplies to the valve must be considered.

Sources
29 CFR 1910.151(c)
ANSI/ISEA Z358.1-2014
International Plumbing Code
29 CFR 1910.1000 to end

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Source: Grainger Know How – https://www.grainger.com/know-how

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Neutralizing Acids and Bases – Quick Tips

Spills of hazardous substances must be absorbed, neutralized or controlled at the time of the incident in order to maintain workplace safety. Acid and base neutralization helps make spilled materials safer to handle and helps decrease the cost of disposal.

How Do You Know If a Solution Is Acidic or Basic?

The best way to determine if a material is acidic or basic is to measure its pH. This can be accomplished with pH paper, chemical indicators or pH meters. The pH scale measures from 0 to 14. Chemicals with a pH of 0 to 3 are considered strong acids. Chemicals with a pH of 12 to 14 are considered strong bases. To be considered neutral, a chemical must have a pH of 7.

Acids typically will have a sour taste and a pH of less than 7. There are two types of acids: mineral (inorganic) acids such as sulfuric, hydrochloric or nitric and carboxylic (organic) acids such as formic or acetic. To neutralize acids, a weak base is used.

Bases have a bitter or astringent taste and a pH greater than 7. Common bases are sodium hydroxide, potassium hydroxide and ammonium hydroxide. Bases are neutralized by using a weak acid.

Products for Acid and Base Neutralization

There are many different products available that aid in the neutralization of acids and bases. They can be as simple as a bag of citric acid or sodium bicarbonate (baking soda), or as complex as a solidifier and a neutralizer combined. Some of the

major considerations in selecting the best method of neutralization are safety (mixing chemicals is always a potentially dangerous process), cost and convenience.

When neutralization occurs, the acid and base react, forming water, salt and heat. If the acid and base are both very strong (such as concentrated hydrochloric acid and concentrated sodium hydroxide), a violent reaction will occur. This is why most neutralizers are very weak – to help keep the reaction at a slow pace and lessen the evolution of heat and gas.

Most neutralizer manufacturers provide an estimated volume of acid/base that their product will neutralize. It can take a large amount of the product to neutralize an acid or base, especially if it is concentrated. Some acid and base neutralizers have a built-in color indicator to let you know when the spill is neutralized. Other neutralizers require you to check the pH with pH paper or a pH meter to monitor the neutralization process. Some neutralizers also solidify the spill as they neutralize, to help make the spill easier to clean up. See the comparison charts below for examples of treatment ratios for some common neutralizers for acids and bases.

Chart A

Gallons of Acid Neutralized		
Acid	Spill-X-A® 2.5 lbs.	Spilfyter®Dry Acid 2.0 lbs.
Acetic 99%	.30	.25
Hydrochloric 37%	.27	.31
Hydrofluoric 49%	.25	*
Nitric 70%	.55	*
Perchloric 70%	.29	*
Phosphoric 85%	.30	.10
Sulfuric 93%	.30	.27

*Not Applicable

Chart B

Gallons of Base Neutralized		
Base	Spill-X-C® 2.0 lbs.	Spilfyter®Dry Base 2.0 lbs.
Ammonium Hydroxide	.41	.25
Potassium Hydroxide	.27	.27
Sodium Hydroxide	.17	.18

Sources

ANSUL Spill X

NPS Corporation

Source: Grainger Know How – https://www.grainger.com/know-how

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What is NIST and ISO – Quick Tips

Get the NIST and ISO information you need here. Get an overview of these organizations to ensure you're in the know when it comes to standards.

The National Institute of Standards and Technology (NIST) is a non-regulatory federal agency under the Department of Commerce. NIST is the United States National Measurement Institute. Their mission is to develop and promote measurement, standards and technology to enhance productivity, facilitate trade and improve the quality of life.

As part of their main mission, NIST certifies and provides standard reference materials (SRM). SRMs are used to perform instrument calibrations, verify accuracy of specific measurements and to support development of new measurement methods. SRMs are also used to support measurement traceability in the United States. NIST provides a Certificate of Analysis and a Material Safety Data Sheet (if applicable) with every SRM.

NIST certification means a product has been tested against an NIST SRM and meets the exacting requirements for that product. Some common NIST certified products include timers, calibration weights, sound level meters, tachometers, electrical multi-meters, thermometers, clocks, pressure gauges, anemometers, pH

meters, micrometers and light meters, just to name a small selection. Basically, most products that measure for something have an equivalent NIST SRM that a manufacturer can compare the product against to ensure it is working within the acceptable parameters. Once the item has been tested it is sold with an NIST certificate with an expiration date on it to let the end user know when the item needs to be recalibrated or retested.

An NIST certification can be a NIST Certificate of Calibration, meaning that the item was tested to be within its stated tolerance of accuracy and if it was not, the unit is adjusted to be within that tolerance. Another type of NIST certification is an NIST Certificate of Compliance. A certificate of compliance means that the unit was tested to be within its stated tolerance and did fall into that tolerance, but no adjustment is possible on the item. Certificates of compliance would be applicable for products such as glass tube thermometers or hydrometers.

NIST Traceable Certificates means that the item in question would not have been tested against an NIST SRM but has been tested against an item that has a paper trail leading back to an NIST SRM. An NIST SRM thermometer might test a second thermometer. If all the appropriate paper work listing all stated uncertainties is filled out properly, that 2nd thermometer would have a certificate of compliance traceable to NIST Standards. Traceability requires the establishment of an unbroken chain of comparisons to stated references. NIST states that it is the responsibility of the provider of the NIST traceable item to support the claim of traceability, but it is the responsibility of the user to assess the validity of the claim.

NIST certification does not imply or indicate any approval, recommendation or endorsement of any product, supplier, manufacturer or user of any NIST certified equipment.

Why get NIST certification or calibration?

NIST certification can be expensive, adding as much as several hundred dollars to the price of the same item without the certification. However, there are several benefits to getting a

certified product. NIST certification will prove that the product you receive has been specifically tested before you receive it to ensure it is accurate. The service of calibration is specifically designed by the NIST to help the makers and users of precision instruments achieve the highest possible levels of measurement quality and productivity.

There are some industries that require International Organization for Standardization (ISO) compliance. Also, there are some organizations that voluntarily strive to meet the ISO requirements so they can advertise as ISO compliant. This compliance is often seen as an indicator of a company's excellent service or product quality. ISO requirements often call for all testing instrumentation to have NIST certification for documentation purposes.

What is ISO?

The International Organization for Standardization (ISO) is a non-governmental organization that is the world's largest developer of standards. Their goal is to create international standards that help facilitate trade, lead to similar levels of workmanship, increase product quality, make the world safer, create more reliable products and services, and increase interchangeability of products and services. Because ISO is non-governmental, their standards are voluntary. They have no authority to enforce their standards. Regulatory agencies may choose to adopt ISO standards and then use their regulatory powers for enforcement.

A common ground for international companies and products make trade easier and more fair. For instance, ISO has a standard regarding the size and configuration of bank cards. That allows international banks to follow one format for automated teller machines (ATM) and credit card swiping machines. It also allows consumers to cross international borders and still use their same cards. Standardization such as this makes life easier for both consumers and manufacturers.

Standards are developed by ISO based on a need that is felt by an industry or business sector which then passes that need on to ISO.

A technical committee is then set up which consists of experts in the field from the industry or business sector requesting the standard. The committee meets to discuss, debate and argue to come up with a draft agreement. The draft is circulated for more discussion and balloting. After accounting for feedback, the draft is circulated again as a final draft for a final vote. If that vote is positive, the standard is published as an International Standard.

ISO's most popular and far reaching standards are their generic standards. Generic standards can be applied to any organization regardless of the size of the operation. Generic standards can apply to both product producers and service providers. ISOs most far reaching generic standards are the ISO 9000 and ISO 14000 families.

ISO 9000 is a family of standards which deals primarily with quality management. Companies striving to meet ISO 9000 requirements are trying to increase customer satisfaction, meet all regulatory requirements, meet customer quality demands and continue to improve their performance in order to meet such objectives.

The ISO 14000 family of standards covers environmental management. Organizations meeting these standards are expected to minimize harmful effects to the environment caused by its activities and to achieve continual improvement of its environmental performance. The main goals of these standards are to reduce the use of raw materials, reduce energy consumption, improve process efficiency, reduce waste generation and disposal costs, and to utilize recoverable resources.

Commonly Asked Questions

Q: Do I need to buy an NIST certified instrument for my application?

A: That is a question that only the end user can answer. There is no difference whatsoever from an instrument without NIST certification and an instrument with NIST certification. The

difference is in the paperwork that accompanies the instrument. If, for your application, you need documentation that the instrument you receive has been tested prior to shipment, then NIST certification is the only way to get that proof. Also, companies that are trying to meet ISO standards need to get the NIST certification.

Q: Can I buy the meter now and then ask for and buy the certification letter at a later time?

A: No. All certifications must be directly linked to their products. You are not only purchasing a letter of certification. That letter is a certification that the exact product you buy has been compared and/or calibrated to NIST standards.

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Source: Grainger Know How – https://www.grainger.com/know-how

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Be Prepared for A Disaster Meeting Kit – Spanish

QUÉ ESTÁ EN RIESGO

Una comunicación eficaz y oportuna es imprescindible antes, durante y después de las catástrofes y emergencias. En caso de incidente, el primer empleado en el lugar de los hechos debe ponerse en contacto con alguien con capacidad de supervisión después de ponerse en contacto con las autoridades (si es necesario) o tomar otras medidas para hacer frente a la emergencia en cuestión. Si no consigue contactar inmediatamente con un supervisor, siga intentándolo.

COMUNICACIÓN CON LOS EMPLEADOS

En situaciones de emergencia, es importante que todos los empleados estén localizados y que comprendan el papel fundamental que desempeñan en el control del flujo de información.

Una lista de contactos debe tener el número de teléfono móvil de cada empleado, su dirección de correo electrónico y un contacto de emergencia. Las propiedades pueden considerar tener un “árbol de llamadas” para que todos los empleados puedan ser localizados y notificados rápidamente. En algunos casos, como una catástrofe natural, el servicio de telefonía móvil puede estar interrumpido y puede ser más fácil comunicarse por correo electrónico. Los mensajes que se transmitan a los empleados deben ser claros y concisos para garantizar una transmisión coherente.

CUÁL ES EL PELIGRO

COMUNICACIÓN EN LA LÍNEA INFERIOR

En cualquier comunicación, es importante ser muy específico sobre el incidente para que no se intensifiquen las exageraciones al comunicarlo. Limítese a los hechos y no especule.

COMO PROTEGERSE

MEJORES PRÁCTICAS DE LOS EMPLEADOS PARA TODAS LAS EMERGENCIAS

Conozca a la persona designada por su empresa durante una

catástrofe o emergencia.

- El primer empleado que llegue al lugar debe llamar al 911, si es necesario. A continuación, el empleado debe ponerse en contacto con el director del lugar o con otro contacto designado por la empresa que le proporcionará instrucciones adicionales.
- Asegúrese de que el servicio de contestador automático, su sitio web y el saludo del buzón de voz estén actualizados con instrucciones e información de emergencia importantes para los residentes.
- Comunique claramente las tareas a todos los empleados de las instalaciones para garantizar una dotación de personal adecuada.
- Si los residentes no pueden ocupar sus apartamentos tras una catástrofe, trabaje con ellos para conseguir un alojamiento provisional, preferiblemente en la comunidad. Recuerde que la propiedad no está obligada a pagar el alojamiento provisional. Anime a los residentes a quedarse con amigos o familiares. El supervisor de su propiedad deberá dar su aprobación antes de que se hagan compromisos para los residentes que soliciten alojamiento en un hotel con cargo a la propiedad.

Seguir estas buenas prácticas puede ayudarle a responder y recuperarse más rápidamente en caso de desastre o emergencia:

- Lleve un inventario de todo el mobiliario de oficina y de la tienda, los equipos, los ordenadores, las fotocopiadoras, los faxes, las herramientas, la maquinaria, los carros de golf y cualquier otro equipo de la propiedad. Registre los números de serie y guarde este inventario en un lugar seguro. Una copia de este inventario debe conservarse fuera de las instalaciones.
- Tome fotos del equipo anotado en el inventario y guárdelas en un lugar seguro.
- Trate de tener un juego de planos de la propiedad física que muestre todas las ubicaciones de los equipos mecánicos, las llaves de paso de agua y gas, los paneles eléctricos

principales, los ascensores, los accesos al tejado y las tuberías verticales. Tenga estos planos a mano para los proveedores de servicios de emergencia.

SUMINISTROS SUGERIDOS PARA CATÁSTROFES

- Radio a pilas, linterna y pilas de repuesto
- Agua embotellada
- Comida enlatada y abrelatas
- Ventiladores para alfombras
- Cámara digital
- Ropa y mantas de repuesto
- Botiquín de primeros auxilios
- Generadores
- Manguera
- Mopas
- Láminas de plástico
- Cartelería y marcadores para los carteles
- Bombas de Presión
- Sacos de arena
- Zapatos resistentes y guantes de trabajo
- Cinta y cuerda para acordonar las zonas peligrosas
- Lonas
- Radio de dos vías

CONCLUSIÓN

Todas las comunicaciones en una catástrofe deben repetir y transmitir sólo los hechos sobre la catástrofe inminente y no especular ni exagerar lo que se informa. Claro, conciso y correcto es el mantra de la comunicación.

Be Prepared for A Disaster Stats and Facts – Spanish

HECHOS

1. Las muertes por catástrofes naturales han experimentado un gran descenso a lo largo del último siglo: de, en algunos años, millones de muertes al año a una media de 60.000 en la última década.
2. Históricamente, las sequías y las inundaciones eran las catástrofes más mortales. En la actualidad, las muertes provocadas por estos fenómenos son muy escasas: los

acontecimientos más mortíferos suelen ser los terremotos.

3. Las catástrofes afectan en mayor medida a las personas que viven en la pobreza: el elevado número de víctimas mortales tiende a centrarse en los países de ingresos bajos y medios que carecen de las infraestructuras necesarias para proteger y responder a los sucesos
4. La mayoría de los incendios domésticos comienzan en la cocina. Cocinar es la principal causa de lesiones por incendios en el hogar.
5. Fumar es la principal causa de incendios mortales en EE. UU. La segunda causa más común de incendios mortales son los equipos de calefacción.
6. Los incendios provocados son la tercera causa más común de los incendios domésticos.
7. Hay más personas que mueren por inhalación de humo que por las llamas. El fuego puede absorber todo el oxígeno de una habitación y sustituirlo por humo y gases venenosos incluso antes de que las llamas lleguen a la habitación. La gente muere por falta de oxígeno antes de que el fuego llegue a su habitación.
8. Estados Unidos tiene una de las tasas de mortalidad por incendio más altas del mundo industrializado.

ESTADÍSTICAS

- Entre 1980 y 1999 se produjeron 3.656 sucesos relacionados con el clima, frente a 6.681 entre 2000 y 2019. Esas diferencias se reflejan en el número de inundaciones, que se ha duplicado con creces en los últimos 20 años, mientras que la incidencia de las tormentas aumentó de unas 1.457 a unas 2.034.
- Unos 100 bomberos mueren cada año en incidentes relacionados con el servicio.
- El fuego es la tercera causa de muerte accidental en el hogar; al menos el 80% de todas las muertes por incendio se producen en residencias que se cobran la mayoría de las vidas de jóvenes, ancianos y personas desfavorecidas.
- Cada año se declaran unos 2 millones de incendios. Muchos

otros no se denuncian, causando más lesiones y pérdidas materiales.

- Cada año mueren más de 5.000 personas en incendios, más de 25.000 resultan heridas y las pérdidas directas de bienes se estiman en más de 9.000 millones de dólares.
- El terremoto más fuerte del mundo en el periodo de tiempo comprendido entre 1990 y 2013, según la medición en la escala de Richter, fue el de Chile en 1960. Con una magnitud de 9,5, este terremoto es el de mayor rango. La magnitud de 9,0 y superior se define como "Casi o a la destrucción total – daños severos o colapso de todos los edificios. Los daños graves y las sacudidas se extienden a lugares distantes.
- El 60% de los adultos estadounidenses no han practicado qué hacer en sus casas o lugares de trabajo en caso de desastre.

Proper Handwashing – Quick Tips

What do Dr. Ignaz Semmelweis and mothers everywhere have in common? The knowledge that proper handwashing is an important means of preventing the spread of disease-causing germs. Dr. Semmelweis was a Hungarian physician who, in the 1840s, demonstrated that the mortality rate among mothers who delivered in the First Obstetrics Clinic at the General Hospital of Vienna was significantly lower when hospital staff cleaned their hands with an antiseptic agent prior to patient contact.

This was the beginning of the concept of infection control, not just in hospital settings, but in public health in general. Today the value of proper handwashing is recognized not only in healthcare settings, but also in schools, child care settings and eating establishments, as well as throughout the general community.

Handwashing

The Centers for Disease Control and Prevention (CDC) recommends cleaning hands in a specific way to avoid getting sick and spreading germs to others:

1. Wet hands with clean running water (warm or cold), turn off the tap and apply soap (liquid or clean bar);
2. Lather hands (palms, backs, between fingers and under nails) by rubbing them together;
3. Scrub hands for at least 20 seconds or for the time it takes to hum the “Happy Birthday” song from beginning to end twice;
4. Rinse hands well under clean running water;
5. Dry hands using a clean disposable towel or air dry; and
6. Turn off tap using disposable towel.

In the event handwashing facilities are not available, an alcohol-based hand sanitizer can be used. The CDC suggests using a sanitizer with an alcohol concentration of 60% or greater. It is important to note that hand sanitizers are effective against common diseases but are ineffective against certain organisms such as bacterial spores. Also, hand sanitizers are less effective if your hands are soiled. Removing any dirt or debris before using the sanitizer will increase the effectiveness.

To use hand sanitizers, apply the product to the palm of one hand, rub hands together and then rub the product over all surfaces of the hands and fingers until hands are dry.

Hand sanitizer should not be used in place of soap and water all of the time due to decreased effectiveness. The reason for decreased effectiveness is alcohol in sanitizers can remove natural oils from your hands, which will cause your hands to dry out and crack. Germs can remain trapped within the cracks of your hands.

Foodborne Illnesses

The Food and Drug Administration (FDA) and CDC work together to control the transmission of pathogens that can result in foodborne illnesses. Transmission of pathogenic bacteria, viruses and

parasites from raw food, or from infected workers to food by way of improperly washed hands, continues to be one of the major factors in the spread of foodborne illnesses.

The FDA's Food Code contains federal recommendations for the prevention of foodborne illnesses in restaurants, grocery stores, institutions and vending locations. This code is used by local, state and federal regulators as a model for their own safety rules. The Food Code contains specific hand hygiene guidelines for retail and food service workers, describing where, when and how to wash and sanitize hands. OSHA's Bloodborne Pathogen standard (29 CFR 1910.1030) mandates that institutions require proper handwashing facilities. If they are not feasible, antiseptic cleansers or antiseptic towelettes must be made available.

Commonly Asked Questions

Q: What is hand hygiene?

A: Hand hygiene is a general term that applies to routine handwashing, antiseptic hand wash, antiseptic hand rub or surgical antisepsis.

Q: Are alcohol-based hand gels accepted in place of washing with soap and water in a retail or food service setting?

A: Retail food and food service work involves a high potential for wet hands, and scientific research questions the efficacy of alcohol on moist hands. Alcohols do not adequately reduce important foodborne pathogens on the preparer's hands, thus the ingredients in alcohol-based gels for retail or food service must be approved food additives and approved under the FDA monograph or as a New Drug Application. Proper handwashing with soap and water is still the preferred method.

Q: Should disinfectants be used for washing hands?

A: No, disinfectants are designed for objects and surfaces and may be too harsh for use on skin tissue. Antimicrobial soaps and alcohol-based soaps are best for proper handwashing.

Sources

CDC’s Clean Hands Save Lives

FDA’s Retail Food Protection: Employee Health and Personal Hygiene Handbook

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Source: Grainger Know How – https://www.grainger.com/know-how

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Ebola Transmission, Symptoms, Infection Control, Treatment and Prevention – Quick Tips

Ebola is a viral disease often referred to as Ebola Hemorrhagic Fever. Ebola was first diagnosed in 1976 during two simultaneous outbreaks in Africa. The outbreak of 2014 is the largest outbreak in history affecting multiple countries of West Africa with the potential to spread globally. There are currently five species of Ebola that have been identified. Each Ebola species is associated with a specific mortality rate. According to the U.S. Navy’s Emerging Infections Department the mortality rate during the 2014

Ebola outbreak in Africa has been between 50 to 75%. Some species, such as the Zaire Ebola virus have been up to 90% fatal. The natural host to the Ebola virus is unknown but antibody testing has shown that fruit bats in Africa may be a reservoir for the disease.

Transmission and Risk

Ebola is spread by direct contact with the virus through broken skin or via mucous membranes (eyes, mouth, and nose). The virus can be found in bodily fluids such as blood, stool, urine, saliva, vomit, mucus, sweat, tears, breast milk and semen. Ebola also can be transmitted from items an infected person has come into contact with such as soiled clothing, bed linens or needles. The people most at risk for contracting Ebola are people who work directly with a patient while he/she is exhibiting symptoms. These include healthcare workers, family members or even mourners and workers who come into contact with the bodies as part of burial rituals. Once exposure to the virus occurs, individuals can become symptomatic within 2-21 days but the average time is between 8-10 days. Once symptoms appear individuals are contagious and able to spread the virus. Anyone who feels they have been exposed to Ebola should monitor his or her symptoms for 21 days and seek medical care immediately if symptoms emerge.

Symptoms

Early common symptoms for Ebola include symptoms similar to many other viral infections. They include fever (greater than 101.5°F), fatigue, muscle pain, abdominal pain, headache and sore throat. As the illness progresses, patients can have nausea, vomiting, diarrhea, impaired organ function as well as blood count changes. Some patients experience rashes, bruising, internal and/or external bleeding from skin, eyes, or gums, which was why Ebola was originally named a hemorrhagic fever. Ebola patients may die from diffuse bleeding and shock.

Anyone showing the symptoms of Ebola after being in direct contact with someone known to have the disease or having been in an area known to have Ebola should seek medical care immediately and limit

exposure to the public. Once the healthcare facility has been informed of the risk of Ebola infection they can perform a blood test to confirm Ebola infection and help minimize the risk to the public with infection control measures.

Infection Control

The Centers for Disease Control and Prevention (CDC) has consolidated a list of Guidelines and Informational sheets to help protect healthcare workers from exposure to Ebola. New guidelines released on October 20, 2014 provide detailed instructions regarding training, demonstration of competency, oversight, and supervision including trained observers during donning and doffing steps. According to the CDC, healthcare workers coming into contact with Ebola or Ebola patients should wear personal protective equipment (PPE) to ensure no skin is exposed. That PPE must be donned correctly and not modified while in the patient care area. The CDC recommended list of PPE includes:

- PAPR (Powered Air Purifying Respirator) OR N95 single-use disposable respirator in combination with single-use disposable surgical hood extending to shoulders and single-use disposable full face shield.
- Single-use disposable fluid-resistant or impermeable gown that extends to at least mid-calf or coverall without integrated hood. Coveralls with or without integrated socks are acceptable.
- Single-use disposable nitrile exam gloves with extended cuffs. Two pairs of gloves should be worn and at minimum outer gloves should have extended cuffs.
- Single-use disposable fluid-resistant or impermeable boot covers that extend to mid-calf; Single-use disposable fluid-resistant or impermeable shoe covers are acceptable if used in combination with a coverall with integrated socks.
- Single-use disposable fluid-resistant or impermeable apron that covers torso to mid-calf should be used if Ebola patients have vomiting or diarrhea.

**With the updated guidance, goggles are no longer recommended as they may not provide complete skin coverage in comparison to a

single-use disposable full face shield. Additionally, goggles are not disposable and may fog after extended use leading workers to be tempted to adjust them with contaminated gloved hands.

Hand Hygiene is a critical tool to help prevent the spread of infection. The World Health Organization (WHO) has created a simple infographic for hand hygiene. Hands should be washed before donning and wearing PPE, before performing any clean or aseptic procedures on a patient, after any exposure risk or exposure to a patient's blood or body fluids, after touching potentially contaminated surfaces in the patient's surroundings and after working with a patient with Ebola and removing contaminated PPE. Hands should be washed with hand soap and water and dried on single-use towels. Alcohol-based hand sanitizers/alcohol-based hand rubs (ABHR) can be used in place of hand washing unless the hands are visibly soiled and then soap and water should be utilized.

Other ways to help control infection include the proper disposal of all sharps, such as needles, in sharps disposal containers and regular and rigorous environmental cleaning including the decontamination of surfaces and equipment using an U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim of potency at least equivalent to that for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus). For more information the CDC has published a document on Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus.

Treatment and Prevention

There are currently no specific vaccines or medicines proven to be effective against Ebola. Best practices for treatment involve treating the symptoms. That includes providing intravenous fluids and balancing electrolytes, maintaining oxygen status and blood pressure and treating any subsequent infections if they occur. Some experimental treatments developed for Ebola have been tested in animals but have not yet been tested in randomized trials in humans. Recovery from Ebola is dependent on the immune response of the patient. However, survivors of Ebola typically develop

antibodies that can last 10 years or more to protect them from subsequent infections.

The best ways to prevent an Ebola infection include:

- Avoid contact with blood and body fluids
- Do not handle items that have come in contact with an infected person's blood or body fluids
- Follow proper hand hygiene guidelines
- Avoid funeral or burial rites that require handling the body of someone who died of Ebola
- Avoid sex without protection with any man who has been infected with Ebola for three months. Ebola virus has been found in semen for up to three months after recovery.

Commonly Asked Questions

1. **How do I protect myself from breathing in Ebola?**
2. Ebola is not an airborne virus. You can only contract the disease by contact with fluids or contaminated items. A standard surgical mask or a disposable respirator can be worn to help prevent fluids from splashing into the mouth when working with a patient or to prevent aerosolized particles from entering the mouth from sneezing or coughing.
3. **Can I get a vaccine to prevent Ebola?**
4. There is no approved vaccine or medications for Ebola at this time, however, some experimental treatments have been tested on animals and further tests are needed to prove efficacy and safety.
5. **Can I come into contact with Ebola naturally in the United States even if I don't have contact with an infected person?**
6. No. The natural reservoirs for the Ebola virus are thought to be bats in Africa. That virus affects human and non-human primates (such as monkeys, gorillas and chimpanzees) after exposure. No animals in North America are known hosts for Ebola.

References and Sources for More Information

World Health Organization (WHO) FAQ on Ebola
WHO Ebola Topic Page

WHO Steps for donning and removing PPE
OSHA Ebola Topic Page
OSHA Fact Sheet: Protecting Workers during a Pandemic
CDC Ebola Factsheet
CDC Facts about Ebola in the US Infographic
CDC Guidelines for Patient Management in US Hospitals
CDC Ebola Guidance for Airlines
CDC Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing)
CDC Fact Sheet on Tightened Guidance for U.S. Healthcare Workers on Personal Protective Equipment for Ebola
DuPont Technical Bulletin for Protective Clothing for Ebola Virus Disease
3M FAQ on Personal Protective Equipment (PPE) for Ebola virus disease

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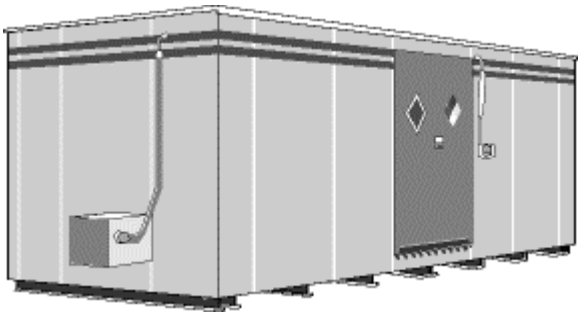
Source: Grainger Know How – https://www.grainger.com/know-how

Outdoor Chemical Storage Buildings – Quick Tips

Safely storing hazardous materials and wastes is a necessity for many companies. Outdoor Chemical Storage Buildings provide an effective solution to fulfill this need. The National Fire Protection Association (NFPA) defines an outdoor chemical storage building as “a prefabricated structure, manufactured primarily at a site other than the final location of the structure, and transported completely assembled or in a ready-to-assemble package to the final location.” These buildings provide an economical means of storage and secondary containment because they eliminate the expense of constructing permanent structures. They also offer the additional benefit of being portable, allowing the buildings to be relocated should the need arise.



When selecting outdoor chemical storage buildings your choice will depend on the materials to be stored, how the building will be used, the volume of the materials being stored and the location of the building and design requirements.

Type of Material to Be Stored

If the materials to be stored are either flammable or combustible, you will need a building that meets the NFPA Code 30, Uniform Fire Code (UFC) Articles 79 and 80, or an equivalent local code. Check with the authority having jurisdiction (AHJ) to determine which code is locally enforced.

The class of the flammable-combustible material (refer to NFPA Code 30) can also dictate what type of building construction is

required. Class I, II, or III flammable and combustible liquids will require either a non-combustible building or a fire-rated building. Non-combustible buildings are constructed of non-combustible material (such as steel), whereas a fire-rated building is constructed of non-combustible materials and includes fire resistant insulation in the walls. Fire-rated buildings are further divided into categories based on the fire resistance of the walls, roof and openings (doors and vents).

With the 2012 revision to the Occupational Safety and Health Administration's (OSHA's) Hazard Communication standard and the adoption of portions of the Globally Harmonized System of Classification and Labeling of Chemicals, flammable liquids are now either Category 1, 2, 3, or 4 flammable liquids. The NFPA fire codes still identify liquids as flammable IA, IB, IC or combustible II, IIIA and IIIB liquids. Information regarding the flammability of the chemical you are storing is located in Section 9 of the Safety Data Sheet (SDS).

OSHA's Flammable Liquid Categories (29 Code of Federal Regulations 1910.106)

Category	Flashpoint	Boiling Point
Flammable 1	< 73.4 °F	≤ 95 °F
Flammable 2	< 73.4 °F	> 95 °F
Flammable 3	> 73.4 °F - ≤ 140 °F	
Flammable 4	> 140 °F - < 199.4 °F	

NFPA Flammable and Combustible Liquid Classifications

Term	Class	Flash Point	Boiling Point
Flammable	IA	< 73 °F	< 100 °F
Flammable	IB	< 73 °F	≥ 100 °F
Flammable	IC	73 °F - < 100 °F	
Combustible	II	100 °F - < 140 °F	
Combustible	IIIA	140 °F - < 200 °F	
Combustible	IIIB	≥ 200 °F	

When storing non-flammable liquids, a non-combustible building may be sufficient, but you should check with the AHJ for specific requirements.

Storage vs. Dispensing

The design of the building will also be affected by whether or not you will be dispensing from containers stored in the building. Explosion relief panels are required for buildings that store and dispense Class IA liquids and that dispense Class IB liquids. Otherwise, an explosion relief panel is not required.

Amount of Material to Be Stored

The interior of the building should accommodate the number of containers required in a single layer and have adequate sump capacity to comply with the Environmental Protection Agency (EPA) Secondary Containment Requirements (40 CFR 264). To meet this regulation, the sump containment should be large enough to hold

100% of the volume of the largest container stored in the building or 10% of the total volume of all containers stored in the building, whichever is larger.

Location

The type of building you select will also have a bearing on the chosen location. Factory Mutual (FM), an insurance and testing agency, no longer specifies minimum distances between the storage building and any other main (occupied) building on the site and the property line of the facility. FM leaves the setback distances up to the AHJ.

Compliance and Approvals

Construction of outdoor chemical storage buildings must comply with a number of regulations including EPA 40 CFR 264, OSHA 29 CFR 1910.106, NFPA Codes 30 and 70, and UFC Article 79 and 80. In addition to the construction requirements, certain approvals may also be required for these buildings. These approvals include UL (Underwriters Laboratories) Classification and FM Approval. Additionally, certain states require that a Professional Engineer apply a Seal of Approval to the building, indicating that it meets all state regulations. Contact the AHJ for more details on the State Seal Program and to verify if your state requires an approval seal.

Options

A variety of options are available for outdoor chemical storage buildings. The options allow you to meet both your regulatory requirements and your custom design needs. Available options include electrical service, heating and cooling systems, fire suppression systems, exterior and interior lighting, shelving, ramps, insulation, emergency eyewash and shower and explosion-resistant features. .

More Assistance

If you have further questions regarding outdoor chemical storage buildings or if you would like help selecting and designing a

building to meet your needs, contact your local Grainger Account Manager.

Commonly Asked Questions

Q: Can outdoor chemical storage buildings be moved from one location to another?

A: Yes. Outdoor chemical storage buildings are designed to be portable. When moving a building to a new location, be sure to confirm that the new location meets all required local codes. A building can also be moved indoors if needed. Buildings for flammable liquid storage being relocated indoors should have a continuous ventilation system that is exhausted to the outdoors, a four-hour fire rating, a fire suppression system and explosion relief panels directed towards a safe exterior location. Also, in most cases when storage is indoors and a sprinkler system is installed, the containment sump is required to be large enough to hold 100% of the volume of the largest container stored or 10% of the combined total volume of all of the stored containers, whichever is larger, plus the additional volume of the water discharged by the sprinkler system in 20 minutes. Again, be sure to consult your local Authority Having Jurisdiction (AHJ) to insure compliance with all local and/or state codes.

Q: Is there a difference between a chemical storage building and a chemical storage locker?

A: Yes. A chemical storage locker is usually smaller in size and generally doesn’t allow workers to enter the structure. Approval of storage lockers is limited to outdoor use only.

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A: Yes. A chemical storage locker is usually smaller in size and generally doesn’t allow workers to enter the structure. Approval of storage lockers is limited to outdoor use only.

Q: Do chemical storage buildings need to be grounded?

A: Yes. According to the FM Approvals LLC, Approval Standard for Storage Buildings and Lockers Class Number 6049 General Design Requirements December 2013, a suitable means of grounding the building and individual containers must be provided. Grounding should meet the NFPA 70 requirements.

Sources

29 CFR 1910.106 *Flammable Liquids*

40 CFR 264 *Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities*

National Fire Protection Association Code 30 *Flammables and Combustible Liquid Codes* 2015 Edition
www.nfpa.org

Factory Mutual
Norwood, MA
www.fmglobal.com

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Source: Grainger Know How – https://www.grainger.com/know-how

Be Prepared for A Disaster Fatality File – Spanish

Las autoridades de Nevada afirman que un terremoto puede ser la causa de la muerte de un hombre que apareció atrapado bajo un vehículo

Al parecer, el hombre estaba trabajando en el vehículo cuando le cayó encima, y el accidente puede haber sido causado por un terremoto de 6,4 grados de magnitud del 4 de julio.

Un hombre de 56 años fue encontrado muerto debajo de un vehículo el martes en Nevada, y las autoridades dicen que un terremoto puede ser el culpable.

El hombre fue visto por última vez en una gasolinera el 3 de julio y probablemente murió mientras trabajaba en su vehículo al día siguiente, dijo el sargento del sheriff del condado de Nye (Nevada), Adam Tippetts, en un comunicado en vídeo.

“Esta muerte puede ser el resultado de la caída del vehículo de los gatos el 4 de julio durante el terremoto”, dijo Tippetts en el comunicado.

Be Prepared for A Disaster Picture This – Spanish



Fuente: *https://www.hoytamaulipas.net/*

Identify, Evaluate and Control Picture This – Spanish



Fuente: ***https://www.abspconsultoriacapacitacion.com/***

Hantavirus – Quick Tips

History

According to the Centers for Disease Control and Prevention (CDC), hantaviruses are a group of viruses that may be carried by some rodents. Some hantaviruses can cause a rare but deadly disease called Hantavirus Pulmonary Syndrome. The disease is commonly called “HPS” for short. Hantavirus and HPS first appeared on the radar of healthcare professionals in 1993 after a cluster of mysterious respiratory related deaths occurred in the Four Corners (the borders of Arizona, Colorado, New Mexico and Utah) region of the U.S.

Within six months of these reports, area medical investigators and virologists were able to link the deaths to a virus that was carried by rodents. Researchers then began to examine stored lung

tissue from people in the area who died from unexplained lung diseases. They found evidence of infection from the hantavirus as early as 1959 indicating the virus existed, unrecognized, for several decades.

The CDC believes that the initial outbreak in the Four Corner region was caused by a 1993 increase of rainfall in the area. The resulting spike in crop production meant more food for rodents. The CDC estimates the rodent population increased by 100% over the prior year. This spike in population led to increased rodent contact with people.

How the Virus is Transmitted

According to the CDC, the deer mouse, white-footed mouse, cotton rat and rice rat are the known transmitters of hantaviruses in the U.S. But in the interest of safety, the CDC recommends avoiding contact with all rodents.

Transmission occurs, according to the CDC, when rodents shed the virus in their urine, droppings and saliva. The virus is mainly transmitted to people when they breathe in air contaminated with the virus.

The CDC describes the most common transmission method and less common methods this way:

The most common reason is when fresh rodent urine, droppings, or nesting materials are stirred up, tiny droplets containing the virus get into the air. This process is known as “airborne transmission.”

Less common methods rodents may spread hantavirus to people include:

- If a rodent with the virus bites someone, the virus may be spread to that person, but this type of transmission is rare.
- Researchers believe that people may be able to get the virus if they touch something that has been contaminated with rodent urine, droppings, or saliva, and then touch their

nose or mouth.
- Researchers also suspect people can become sick if they eat food contaminated by urine, droppings, or saliva from an infected rodent.

According to the Mayo Clinic, the North American strain of HPS isn't transmitted via person-to-person contact. They state, "People who become infected with the North American strain of hantavirus pulmonary syndrome aren't contagious to other people. However, certain outbreaks in South America have shown evidence of being transmitted from person-to-person, which illustrates variation across strains in different regions." The CDC's hantavirus resource page also states that HPS cannot be transferred person-to-person via blood transfusion.

The CDC flags occupations such as construction, utility and pest-control as being most at risk for hantavirus exposure. However, anyone who comes in contact with a rodent is at risk.

The CDC also identifies activities that place individuals at risk for hantavirus exposure as:

- Opening and cleaning previously unused buildings
    - Opening or cleaning cabins, sheds and outbuildings, including barns, garages and storage facilities that have been closed during the winter is a potential risk for hantavirus infections, especially in rural settings.
- Housecleaning activities
    - Cleaning in and around your own home can put you at risk if rodents have made it their home too. Many homes can expect to shelter rodents, especially as the weather turns cold.
- Work-related exposure
    - Construction, utility and pest control workers can be exposed when they work in crawl spaces, under houses, or in vacant buildings that may have a rodent population.
- Campers and hikers
    - Campers and hikers can also be exposed when they use

infested trail shelters or camp in other rodent habitats.

Through January of 2016, there were 692 confirmed cases of the HPS in the U.S. This map from the CDC shows the breakdown for each state (map current as of January 8, 2016):

Hantavirus Pulmonary Syndrome (HPS) Cases, by State of Residence

Symptoms and Treatment

According to the CDC, "due to the small number of HPS cases, the "incubation time" is not positively known. However, on the basis of limited information, it appears that symptoms may develop between one and eight weeks after exposure to fresh urine, droppings, or saliva of infected rodents." The CDC breaks symptoms down into early and late. Early symptoms include fatigue, fever and muscle aches, especially in the large muscle groups—thighs, hips, back, and sometimes shoulders. These symptoms are universal. There may also be headaches, dizziness, chills and abdominal problems, such as nausea, vomiting, diarrhea, and abdominal pain. About one-half of all HPS patients experience these symptoms.

Four to 10 days after the initial phase of illness, the late symptoms of HPS appear. According to CDC resources, "these include coughing and shortness of breath, with the sensation of, as one survivor put it, a "…tight band around my chest and a pillow over my face" as the lungs fill with fluid." The CDC reports that HPS has a mortality rate of 38%.

There are limited treatment options for HPS, and both the CDC and Mayo Clinic state that because of this, the earlier the victim receives medical attention the better the long term prognosis. The Mayo Clinic offers the following overview of treatment protocols:

Specific treatment options for hantavirus pulmonary syndrome are limited. But the prognosis improves with early recognition, immediate hospitalization and adequate support for breathing.

Supportive therapy

People with severe cases need immediate treatment in an intensive care unit. Intubation and mechanical ventilation may be needed to support breathing and to help manage fluid in the lungs (pulmonary edema). Intubation involves placing a breathing tube through your nose or mouth into the windpipe (trachea) to help keep your airways open and functioning.

Blood oxygenation

In extremely severe cases of pulmonary distress, you'll need a method called extracorporeal membrane oxygenation to help ensure you retain a sufficient supply of oxygen. This involves continuously pumping your blood through a machine that removes carbon dioxide and adds oxygen. The oxygenated blood is then returned to your body.

Prevention, Personal Protection and Cleaning

Back in 1993, during the peak of the hantavirus outbreak, the CDC published their Interim guidelines for hantavirus risk reduction. There have been no updates to this document since its original publication. The guidelines offer direction for those looking to safely eradicate rodent infestations and those looking to reduce exposure risk when rodent contact is a possibility. Detailed cleaning procedures as well as appropriate personal protective equipment (PPE) are discussed. For those seeking direction in this area, please refer to the CDC's guidelines.

Commonly Asked Questions

Q: What PPE should I use if I'm cleaning up rodent contaminants that may contain hantavirus?

A: The best answer to this is currently found in the CDC's Hantavirus Infection – Southwestern United States: Interim Recommendations for Risk Reduction. It states the following, "Persons involved in the clean-up should wear coveralls (disposable if possible), rubber boots or disposable shoe covers, rubber or plastic gloves, protective goggles, and an appropriate respiratory protection device, such as a half-mask air-purifying (or negative-pressure) respirator with a high-efficiency

particulate air (HEPA) filter or a powered air-purifying respirator (PAPR) with HEPA filters. Respirators (including positive-pressure types) are not considered protective if facial hair interferes with the face seal, since proper fit cannot be assured. Respirator practices should follow a comprehensive user program and be supervised by a knowledgeable person." Since 1993, the approval designations for negative-pressure, air-purifying respirators has changed. The current equivalent to a HEPA filter is a P100 filter.

Sources

CDC's Hantavirus Resource Page

Mayo Clinic's Hantavirus Resource Page

OSHA's Hantavirus Resource Page

CDC's Hantavirus Infection – Southwestern United States: Interim Recommendations for Risk Reduction

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