In Case You Haven’t ‘HERD’ About...

Home Cooking: Hold the Infections!

Many cases of foodborne infections occur in the home as a result of incorrect food handling and preparation. In 1997, 100 home kitchens were inspected as if they were a commercial kitchen and 96% had critical violations.

In the US, an estimated 76 million cases of food borne disease occur every year. About 20% of these cases occur from home food preparation. About 70% of all meals are prepared in the home.

A study of persons infected with E.coli O157 revealed that 80% of the cases were the result of improperly handled hamburger prepared and eaten in the home. Several other infectious agents such as Listeria, Salmonella, and Campylobacter are associated with contaminated raw foods.

Raw foods including meat, poultry, eggs, fish, shellfish, fruits and vegetables are all potential routes of entry into the kitchen.

The four most common errors are:
1. Incorrect cooking temperatures
2. Incorrect food storage temperatures and times
3. Incorrect food cleaning procedures
4. Incorrect handling of raw and cooked foods resulting in cross-contamination

Correct cooking temperatures
First, you need a food thermometer that can be easily inserted into food and easily sanitized and cleaned.
Cook raw beef, lamb, and pork to 145°F. Cook all ground meats to 160°F. Cook poultry to 165°F.
Reheat leftovers to 165°F.

When cooking raw meats with a microwave oven, allow the meat to stand for 3 minutes in the oven before serving to allow the heat to kill any pathogens in the meat.

Correct food storage temperatures
The refrigerator should operate at 40°F. At this temperature, an open package of hot dogs can be stored for 1 week; a closed package for 2 weeks. Ground meats can be stored for 1 to 2 days before cooking. Fresh chicken should be stored for 1 to 2 days. Leftover cooked meats should be reheated and reused within 4 days.

Frozen foods will remain safe indefinitely however quality may deteriorate.

Correct food cleaning
Raw fruits and vegetables should be washed before you peel, cut, eat or cook with them.

For produce with thick skin, use vegetable brush to clean soil out of crevices. Produce such as broccoli or lettuce should be soaked for 1-2 minutes in cold, clean water. Fragile produce should be placed in a colander and sprayed with clean water. Commercial vegetable cleaning products are no more effective than effective washing or soaking with clean cold water.

E. coli O157 infection often causes severe, acute hemorrhagic diarrhea (although nonhemorrhagic diarrhea is also possible) and abdominal cramps.


Homeowners are increasingly concerned about air contaminants that may be causing or triggering illness in the home. News reports continue to identify sources of particulates, dusts, fumes, mists, gases and vapors such as sulfur compounds from drywall from China, formaldehyde from pressed wood furniture, and radon from the soil under the basement floor. Combustion sources such as gasoline engines, natural gas or propane stoves, water heaters, oil fired furnaces, fireplaces and woodstoves emit carbon dioxide, carbon monoxide, nitrogen oxides, and fine particles. Water leaks, floods and condensate water from humid air raise concerns about mold and airborne mold spores and mycotoxins.

The DIYer seeks methods to detect and measure one or more of these contaminants. To correctly evaluate the potential hazard, air samples are taken in different rooms, under varying conditions, and during different seasons of the year. Another option is to identify the worst case, which is often during the winter "heating months" when windows are closed and air is re-circulated, and to sample then.

The American Industrial Hygiene Association can provide a list of accredited environmental laboratories that can provide sampling devices and procedures. Once collected, the air sample is returned to the laboratory for analysis. In addition, there are several firms that provide prepackaged sampling devices at big box hardware stores and include laboratory analysis costs in the price.

Another alternative is to purchase consumer quality real time air contaminant detection and analysis devices. These devices are sold at a fraction of the cost of commercial or professional devices used by Certified Industrial Hygienists.

For example, the Safety Siren Pro Series Radon Gas Detector continuously measures radon at a cost of $130. The Corentium radon monitor costs $250. However, the expert level radon monitor by Durridge is $7,000.00. All three devices display the radon concentration in picocuries per liter (pCi/L). In this case, the consumer devices are sufficiently accurate to identify a potential radon problem that requires additional investigation.

Fine particles are particles in the range of 0.3 microns to 10 microns and can be produced by several processes. These include combustion, welding, and biological processes (mold spores). The Dylos DC 100 Pro laser particle counter has a cost of $300 while an expert device, the Met One GT-321 laser particle counter, has a cost of $1,650. This device can be used to determine if the HEPA filter on your vacuum cleaner is working correctly.

There are consumer air detectors and monitors for carbon monoxide, carbon dioxide, formaldehyde, volatile organic compounds, and certain specific gases and vapors such as ammonia.

In summary, the DIYer can now purchase real time analyzers for the air contaminants of health concern usually for less than $500 per contaminant. By following the directions and understanding the limitations, these devices can provide useful information on which to make decisions about a contaminant. Caution is warranted because contaminant sensors are often non-specific and detect not one contaminant but a family of contaminants. There is also the matter of calibration against a standard.
Ladders: Don’t Fall for It!

There are three types of ladders used around the home to reach elevated areas both indoors and outdoors such as gutters, roofs, tree branches, and house walls for painting, siding and repairs.

OSHA reports that 16% of fatal construction injuries and 24% of non-fatal injuries result from incorrect use of ladders. In fact, in construction, 81% of all fall injuries are caused by ladders. 50% of all injuries occur when workers attempt to carry objects while climbing. The three points of contact rule means that 2 hands and 1 foot or 2 feet and 1 hand are always gripping the ladder rails and rungs. 50% of all injuries resulting from falls of 15 feet or higher are fatal.

Extension ladders, step ladders and articulated ladders that are both extension and step as needed.

There are four ladder issues to deal with:

1. Height needed to reach.
2. The maximum safe reaching height is 4 feet higher than the ladder.
3. Weight of person and equipment on the ladder.
4. Materials of construction: wood, fiberglass or aluminum and weight of the ladder.
5. Cost

These factors sometimes work together. For example, an industrial duty step ladder can range in height from 3 to 20 feet. These are 1AA and 1A and hold 375 or 300 pounds. Medium duty ladders can support 225 pounds and are Type II. These are limited in height to 12 feet while light duty ladders are limited to 3 to 6 feet and can support 200 pounds.

50% of injuries are falls that result from stepping off and onto the ladder onto an elevated platform such as roof or tree branch.

Can or should you handle these by yourself? Yes and No.

An 8 foot wood ladder weighs 40 pounds, while a fiberglass ladder weighs 26 pounds. The aluminum ladder is lightest at 22 pounds.
By comparison, a 40 foot extension (2 – 20 feet ladders) weighs 100 pounds and can cost $1,000. A 40 foot fiberglass weighs 90 pounds while the aluminum version weighs 90 pounds.

As you can predict light duty ladders weigh less than industrial duty ladders.

Extension ladders need to be angled against the supporting surface: 1-ft for every 4-ft of height. Hence a 20 foot ladder must be at least 5 feet from the base of the wall.

There are three accessories to consider purchasing with your ladder. For some homeowners, these are essential for safe ladder use, not “accessories”.

1. Foot extensions for extension ladders that permit ladders to be placed on uneven surfaces.
2. Top rail extensions that extend the rails by 4 feet above the roof and allow for a good grip while swinging the legs onto and off of the ladder. (Guardian Safety Ladder Extensions)
3. Ladder stabilizers: these are metal U shaped rods that hold the ladder about 10-12 inches away from the wall and span 4-ft. Typically the stabilizers span the width of a window allowing the ladder to be placed in front of but not on the window.

Think about all of the elevated areas you need to reach with a ladder. You may need two step ladders, one extension ladder and one articulated, e.g. Little Giant type ladder to reach all of these locations. These could easily cost $2,000-$2,500 and need covered storage when not in use to protect the ladder.

For long term projects, renting aerial lifts and temporary scaffolds may be a safer solution than using ladders.

Check out the major ladder manufacturers and the American Ladder Institute:

Werner Ladders, Lynn Ladders, Louisville Ladders and Little Giant Ladders.
**Vacuum Cleaners and Healthful Indoor Air: A Connection?**

_Individuals_ with asthma, allergies and other respiratory diseases are aware of the role that fine dust, dander, fine particles, pollen, and mold spores have in their illness. These air contaminants may be brought into the home from outdoors that were collected on shoes and clothes.

In 2013, the Journal of Applied and Environmental Microbiology reported on a study “Microbial Control of Vacuum Cleaner Bag Dust and Emitted Bioaerosols”. The author reported that vacuum cleaners have the capability of disseminating appreciable quantities of mold and human associated bacteria and viruses, some from the large volume of skin cells shed continuously. It was suggested that vacuum cleaners could be a significant source of infectious agents spread by contact and by air.

Vacuum cleaners are used to control small objects and settled fine particles of all types on all household surfaces: floors, walls, and furniture. The filtration efficiency of a vacuum cleaner may significantly affect airborne dust and allergens in indoor air.

The release of fine particles can be simply controlled by the installation of a HEPA (high efficiency particulate air) filter on the exhaust. Some industrial clean room vacuum cleaners are fitted with ULPA (ultra-low penetration air) filters that increase removal of 0.12 micron particles to 99.999 percent. Most HEPA filters are disposable and must be replaced every 6 to 12 months. These filters must be tightly fitted to an air tight vacuum cleaner to ensure that 100 percent of the exhaust air passes through the filter. There is resistance to airflow caused by the filters which must be overcome by more powerful blowers that use more electricity and process more air. HEPA filters and the device itself have to be tested using standard filter testing methods to verify 99.97 or 99.9999 percent removal of 0.3 or 0.12 particles.

The household vacuum cleaner market is dominated by firms such as Shark, Dyson, TTI Floor Care brands, Bissell, Hoover and Miele. The annual sales of these vacuum cleaners in the US is $4bn with a global market of $12bn. Hence, these are significant cleaning devices with significant initial and maintenance costs. Therefore, these devices should be able to clean effectively without creating air contaminant hazards for the operator and others in the home, human and pet.

In addition to household or consumer vacuum cleaners, there are also machines made for the commercial cleaning and industrial markets.

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*Air contaminants may be brought into the home from outdoors that were collected on shoes and clothes.*

BISSELL BigGreen Commercial Bagged Canister Vacuum, 7.3L Bag Capacity
Most manufacturers produce upright and canister type vacuum cleaners fitted with HEPA or ULPA filters. If you have asthma or are concerned with indoor air quality, it is best to check the manufacturer’s specifications to insure the vacuum you are purchasing is equipped with a HEPA or ULPA filter.

Industrial vacuum producers include Nilfisk, Pullman Holt, NIKRO and Goodway. These cleaners typically have longer hoses, high airflow rates, high suction and large motors (1.5 to 2 HP). These typically cost from $600-$1,500 per vacuum but are designed for heavy long term use.

Some consumers may choose to purchase a commercial or industrial vacuum cleaner rather than a household vacuum cleaner.

A particle counter should be used on a routine basis to test HEPA and ULPA filters. A particle counter should also be used when the filter is replaced to ensure that the filter or its housing does not leak.

One approach to avoiding the need for a HEPA equipped vacuum cleaner is to install a central vacuum cleaner with an exhaust discharge out of doors away from the house and openable windows and doors. However, there is no clear advantage of a built in vacuum cleaner over a tested commercial or industrial HEPA filtered unit. Collection bags that can be sealed are preferred over bag less units due to possible inhalation exposures during removal and cleaning of the collection container.

The DustTrak™ DRX Aerosol Monitor 8534 handheld monitor measures aerosol contaminants such as dust, smoke, fumes and mists.