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## Food Facts For You!

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**Home Processing of Tomatoes and Other Acid Foods in Flowing Steam and Hot Water Bath Canners; Hook into Healthy Fish; Getting to Know Your Freezer; The Chill Center; Summer Gardening: Vegetable Planting Guide & Food Preservation Wisline Programs; What's on Your Mind (Is it Done Yet?, and lemon curd.)**

### **Home Processing of Tomatoes and Other Acid Foods in Flowing Steam and Hot Water Bath Canners**

The USDA does not recommend the use of steam canners for canning acid foods, including fruits, acidified vegetables, and pickles because of a lack of data demonstrating that the use of flowing steam in home canning is safe. There are no published data on comparison of time-temperature relationships for steam and hot water bath canners (boiling water canners). Neither steam nor hot water canners are recommended for use in canning low-acid foods (those with a pH above 4.6) such as meat, chicken and vegetables such as corn, green beans and carrots.

Master food preservers, working with a staff scientist at the University of California-Davis, conducted research to determine whether a steam canner could be as safe as a hot water bath for home canning of acid foods. Standard Ball® canning lids were fitted so that thermocouples (thin wires for measuring temperature, hooked to a recording device) could be placed inside canning jars. The researchers tested canning of tomato juice, sliced peaches, whole peeled solid packed tomatoes and applesauce to represent the range of densities and texture of most home-canned foods. For each of these foods, pint jars (quart jars were too tall for the steam canner and were **not** tested) were filled with food, leaving 1/2-inch headspace, covered with the prepared lids and placed into the canner. Water sufficient to cover the pint jars by 1-inch was used in the water bath canner, and 3 pints of water were used in the steam canner.



All items were cold-packed (cold food with cold liquid used), placed into one of the two canner types, and the temperature was recorded during the process. The process was divided into two stages: 'come-up' time (the time for the water bath canner to reach 212 °F – boiling; or for the steam canner to vent steadily for 5 minutes - to purge all air from the canner); and 'processing time', the time for the temperature inside the jars to reach the target temperature of 180 °F. A target temperature of 180° was selected as a temperature which would destroy

pathogenic bacteria as well as acid-tolerant spoilage bacteria that may be present in acid foods.

Results: For each of the four products tested: tomato juice, peaches, solid pack tomatoes and applesauce, the processing time for the steam canner was equal to, or shorter, than the processing time for the standard boiling water canner. The authors concluded that a steam canner can be accepted as a safe method for processing acid foods.

**Based on these results, will Wisconsin begin to recommend steam canners as a safe alternative for processing acid foods? NO! And why not?** Unfortunately, the methods followed for this research did not mimic processes outlined in the **USDA Complete Guide to Home Canning**. The USDA Guide contains a wealth of home canning recipes that have been laboratory-tested for safety. The results of the California study, while encouraging, can not be compared to standard home canning practices.

For example, in the California study, while the jars were pre-heated, the contents added to the jars were at room temperature, or colder, and cold liquid, if necessary, was added. The USDA Guide specifies that liquid added to jars, even those that are cold packed, must be hot/simmering. Adding cold liquid to the jars would have affected the 'come up' time and does not mimic standard practice. Furthermore, the processing time that the researchers used in their comparison were not equivalent to those in the USDA Guide for the products that they chose, so we have no real way to judge the validity of these results. Unfortunately, it appears that the peer-review process that led to acceptance of this work in a scientific journal failed to take into account the standard methods for home canning. Although published just this year, the work cited in this article was conducted in 1994. Changes in the USDA Guide since 1994 may be one reason the research does not provide a foundation for recommendations today. *M. Samida, L. Geer, and G. York. 2005. Home Processing of Tomatoes and Other Acid Foods in Flowing Steam and Hot Water Bath Canners. Journal of Food Protection 25:178-181.*

### **Hook into Healthy Fish**

The calendar says that spring is here, and many people have begun to look to spring-time activities that they enjoy – so fishing naturally comes to mind! It's a good time, then, to revisit the recommendations for consumption of fresh-water fish harvested in Wisconsin, as well as current FDA recommendations on consumption of popular salt-water fish such as tuna.

**Reel in the facts from the DNR about contaminants in fresh-water fish in Wisconsin.** *The Department of Natural Resources (DNR) updates their fish consumption advisory for Wisconsin waters every year. Here are the highlights:*

Mercury and polychlorinated biphenyls (PCBs) are the contaminants of greatest concern in Wisconsin's fish. To reduce people's exposure to these contaminants, the state issues advice to help individuals choose what fish to keep as well as how often and how much fish to eat. This information is not intended to discourage consumers from eating fish, but should be used as a guide to eating fish low in contaminants. Extensive information is available that details fish consumption advisories for all Wisconsin waters:

**Choose Wisely: A Health Guide for Eating Fish in Wisconsin** (20 pages)  
<http://www.dnr.state.wi.us/org/water/fhp/fish/pages/consumption/choosewisely04.pdf>

The fish consumption advisory includes the following general recommendations:

**Safe Eating Guidelines for most of Wisconsin's inland (non-Great Lakes) waters.**

***Women of childbearing years, nursing mothers, all children under 15 may eat:\****

- 1 meal per week: Bluegill, sunfish, black crappie, white crappie, yellow perch or bullheads, **and**
- 1 meal per month: Walleye, northern pike, smallmouth bass, largemouth bass, channel catfish, flathead catfish, white sucker, drum, burbot, sauger, sturgeon, carp, white bass, rock bass or other species.\*

(\*Muskie should **not** be eaten by this group of people due to high mercury content.)

***Men, and women beyond their childbearing years may eat:***

- Unlimited amounts: Bluegill, sunfish, black crappie, white crappie, yellow perch, or bullheads, **and**
- 1 meal per week: Walleye, northern pike, smallmouth bass, largemouth bass, channel catfish, flathead catfish, or other species.

Additional restrictive advice is necessary for some waters where fish have been found to contain higher levels of mercury: see **Hook into Healthy Fish** (2 pages)

<http://www.dnr.state.wi.us/org/water/fhp/fish/pages/consumption/hookintohealthyfish04.pdf>

The DNR encourages all Wisconsin residents to follow these common sense guidelines so that the benefits of eating fish will outweigh the health risks.

**What about mercury in fish and shellfish from non-Wisconsin waters?** Many of us find that the fish that we eat comes from the grocery store, either fresh/frozen or canned fish and shellfish, and not from Wisconsin waters. The Food and Drug Administration (FDA) offers the following **fish-consumption advice for women who might become pregnant, women who are pregnant, nursing mothers and young children:**

Fish and shellfish are an important part of a healthy diet. Fish and shellfish contain high-quality protein and other essential nutrients, are low in saturated fat, and contain omega-3 fatty acids. A well-balanced diet that includes a variety of fish and shellfish can contribute to heart health and children's proper growth and development. So, women and young children in particular should include fish or shellfish in their diets due to the many nutritional benefits.

However, nearly all fish and shellfish contain traces of mercury. For most people, the risk from mercury by eating fish and shellfish is not a health concern. Yet, some fish and shellfish contain higher levels of mercury that may harm an unborn baby or young child's developing nervous system. The risks from mercury in fish and shellfish depend on the amount of fish and shellfish eaten and the levels of mercury in the fish and shellfish. Therefore, the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) are advising women who may become pregnant, pregnant women, nursing mothers, and young children to avoid some types of fish and eat fish and shellfish that are lower in mercury.

By following these 3 recommendations for selecting and eating fish or shellfish, women and young children will receive the benefits of eating fish and shellfish and be confident that they have reduced their exposure to the harmful effects of mercury:

**Safe Consumption Guidelines for Pregnant Women, Women of Child-Bearing Age and Young Children Consuming Salt-Water Fish:**

- **Do not eat** Shark, Swordfish, King Mackerel, or Tilefish because they contain high levels of mercury.

- **Eat up to 12 ounces (2 average meals) a week of a variety of fish and shellfish** that are lower in mercury. Five of the most commonly eaten fish that are low in mercury are **shrimp, canned light tuna, salmon, pollock, and catfish**. Note: Another commonly eaten fish, canned albacore ("white") tuna has more mercury than canned light tuna. So, when choosing meals, canned 'white' or albacore tuna may be consumed in **one average meal per week (6 ounces)**. **Tuna steak** should also be limited to one meal per week.
- **Check local advisories** about the safety of fish caught by family and friends in your local lakes, rivers, and coastal areas. If no advice is available, eat up to 6 ounces (one average meal) per week of fish you catch from local waters, but don't consume any other fish during that week.

Follow these same recommendations when feeding fish and shellfish to your young child, but serve smaller portions.

**"What about fish sticks and fast food sandwiches?"** Fish sticks and other prepared fish items are most often prepared from pollock and other fish that are low in mercury. These items could be consumed as part of a healthy diet (2 average meals per week).

**"What about canned tuna?"** Canned tuna is found in two forms: canned light tuna (less expensive) and canned white (albacore) tuna (more expensive). Canned light tuna can be consumed in up to two average meals per week, perhaps as a tuna casserole or tuna-salad sandwiches. Canned 'white' tuna should be consumed no more than once per week.

**"What if I have already eaten tuna twice this week? Can I go out on Friday evening for a fish-fry where they are serving walleye?"** One week's consumption does not change the level of mercury in the body very much. However, individuals who consume a lot of fish caught in Wisconsin waters should limit consumption of other fish and vice versa. If you eat a lot of fish one week, you can cut back for the next week or two. Just make sure you average no more than the recommended amount per week. A brochure outlining fish consumption guidelines for consumers is available in both English & Spanish: <http://www.cfsan.fda.gov/~dms/admehg3b.html>

### **Getting to Know Your Freezer**

Is your freezer an overstuffed warehouse of aging mystery meat? A recent article in *Cook's Illustrated* (March / April 2005) provides some hints on organizing your freezer effectively.

#### **FREEZER BASICS**

"How long can I freeze.....?" From a safety standpoint, food that is frozen properly (kept at a temperature of 0°F or below) will be safe to eat for a long time. The growth of microorganisms stops when water is frozen, so foodborne pathogens will not grow in the freezer. Chemical changes will, however, take place, albeit slowly, at cold temperatures. So it is chemical changes that often dictate the storage time for frozen food. Changes in the texture, color, and flavor of food that has been frozen for a long period of time may not be evident until the food is thawed. Exactly how much time a food can be frozen depends on the freshness of the food when frozen, the age, efficiency and type of freezer (and how full it is), the frequency with which the door is opened, and various other factors.

- **Temperature:** Many freezers are not cold enough. Check the temperature with a refrigerator/freezer thermometer. Your freezer should register 0°F or colder at all times.
- **Air flow:** Keep foods away from the vent in the ball wall of the freezer, this allows the cold air to circulate more efficiently.

- **The coldest spot:** The rear center is the coldest spot in the freezer. This is the best place to store the products that will benefit from limited freeze/thaw cycles, such as ice cream and uncooked meat and chicken.
- **The warmest spot:** The door shelves are the warmest spot in most freezers. They are a good place to store frequently used items and foods less prone to spoiling, such as coffee, bread, butter and nuts.

**THE RIGHT WRAP**

Extended storage of food in any freezer requires effective wrapping to preserve quality. First, wrap the food tightly. This prevents the moisture loss know as freezer burn. Aluminum foil or butcher paper can be an effective inner wrap for frozen items. A second (outer) wrap is recommended for most foods. Freezer bags will help keep moisture in, and off-odors and off-flavors out. Be sure to use a bag specifically designed for use in the freezer, a zipper-lock bag works well. Third, wrap individual portions separately. Items will freeze more quickly and they can be defrosted individually.

Reference storage charts for **Cupboard, Refrigerator and Freezer** storage can be found on-line: <http://www.oznet.ksu.edu/humannutrition/hrap/storage/stochart.htm> News releases and other resources in this area are also available online: **Storing Food at Home** [http://www.wisc.edu/foodsafety/Food%20Preservation/storing\\_food.htm](http://www.wisc.edu/foodsafety/Food%20Preservation/storing_food.htm)

**The Chill Center**

The University of Nebraska has developed a new resource: **The Chill Center**. The refrigerator is the center for food safety in many homes. Included in the resource are a **refrigerator food safety quiz**, “**Store It, Don’t Ignore It**” chart, refrigerator and hand washing posters, and more! Be sure to check out this resource if ‘chilling’ is in your future <http://lancaster.unl.edu/food/chill.htm>

**Summer Gardening: Vegetable Planting Guide, Use of Manure as a Fertilizer, and Food Preservation Wisline Programs**

**Vegetable Planting Guide.** Maybe some of you have already gotten a start on spring planting, but for many of us will be looking to start planting later this month. How many rows of green beans should you plant this year if you want to freeze plenty for the winter? How many pounds of summer squash will you harvest from 2-3 hills? Answers to these questions can be found in some very helpful tables developed by Kansas State and summarized here.

Crop	Vegetable Yield	Planting
Asparagus	30 pounds	10-15 plants
Beans, snap bush	120 pounds	15-16 feet
Beans, snap pole	150 pounds	5-6 feet
Beans, lima	25 pounds, shelled	10-15 feet
Beets	150 pounds	5-10 feet
Broccoli	100 pounds	3-5 plants
Cabbage	150 pounds	3-4 plants
Cabbage, Chinese	80 heads	3-10 feet
Carrots	100 pounds	5-10 feet
Cauliflower	100 pounds	3-5 plants
Chard, Swiss	75 pounds	3-5 plants

Crop	Vegetable Yield	Planting
Corn, sweet	10 dozen	10-15 feet
Cucumbers	120 pounds	1-2 hills
Eggplant	100 pounds	2-3 plants
Lettuce, head	100 heads	10 feet
Muskmelon	100 fruits	3-5 hills
Onions (plants, sets)	100 pounds	3-5 feet
Parsnips	100 pounds	5 feet
Peas, English	20 pounds, shelled	15-20 feet
Peppers	60 pounds	3-5 plants
Potatoes, white	100 pounds	50-100 feet
Pumpkins	100 pounds	1-2 hills
Radishes	100 bunches	3-5 feet
Soybeans, edible	20 pounds, shelled	50 feet
Spinach	40-50 pounds	5-10 feet
Squash, summer	150 pounds	2-3 hills
Squash, winter	100 pounds	1-3 hills
Tomatoes	100 pounds	3-5 plants
Turnips	50-100 pounds	5-10 feet
Watermelon	40 fruits	2-4 hills

More information including planting dates, potential disease problem, and information on even more crops can be found in the Vegetable Planting Guide from Kansas State University available online: <http://www.oznet.ksu.edu/library/hort2/MF315.PDF>.

**Safe Use of Cow Manure as a Garden Fertilizer.** Many vegetable gardeners swear to the benefits of cow manure as a fertilizer. Adding cow manure to soil improves the soil texture and water-holding capacity while providing nutrients needed by growing plants. Unfortunately, fresh cow manure can also contain a variety of disease-causing bacteria and protozoa that could contaminate vegetables. This risk of contamination is serious enough that USDA's National Organic Program rules specifically address when non-composted manure can be applied to soil used for vegetable growing. If the vegetables have edible portions that might be contacted by soil (either directly or via rain/irrigation splash), then the manure must be applied at least 120 days prior to harvest. In Wisconsin, 120 days covers most of the vegetable growing season, so adherence to this limit is often impractical for same-year applications. **Can a shorter fertilization-to-harvest interval be safely used by Wisconsin vegetable growers?** Probably not. Recent research done by Steve Ingham, UWEX Food Safety Extension Specialist, has found that applying fresh cow manure 90, 100, or 110 days prior to harvest may significantly increase the likelihood that bacteria from manure will contaminate vegetables. And, even if the 120-day limit is followed, fecal bacteria from birds, other wildlife, and possibly the cow manure, too, may still contaminate soil and vegetables. **The interval between fertilization and planting is even more important** than the fertilization-to-harvest interval. The safest options for Wisconsin vegetable growers are to:

- 1) use sterilized manure (available from gardening stores),
- 2) use properly composted manure for same-year applications, or
- 3) apply non-composted cow manure in the fall of the preceding harvest year; the winter weather will destroy pathogens that may be present in the fresh manure.

**The risk of vegetable contamination cannot be eliminated if non-composted cow manure is applied in the spring.** If spring fertilization is done, both the fertilization-to-planting and fertilization-to-harvest intervals should be maximized, perhaps by only fertilizing soil used in growing late-season vegetables. Thorough washing and peeling of vegetables can also reduce the risk of contamination, but will not ensure safety. Cooking vegetables will also reduce or eliminate the contamination risk. *S.C. Ingham et al. 2005. Evaluation of fertilization-to-planting and fertilization-to-harvest intervals for safe use of noncomposted bovine manure in Wisconsin vegetable production. J. Food Protection. 68:in press.*

**Summer Food Preservation Programming.** This year consumers and staff alike have several options for food preservation training. I have scheduled a series of **food preservation Wisline** programs for May through July. These will be similar to last year's programs and should be useful for new staff that did not have a chance to participate last year. I have scheduled these programs for earlier in the summer this year to avoid being unprepared for crops maturing ahead of schedule. Because these programs will occur earlier in the summer, I have scheduled an 'open line' for canning questions in mid-July and, if that one is useful, I would like to schedule one to two more 'open line' programs before the end of the bulk of the harvest season in mid-September.

**Summer Wisline Food Preservation Programs**

<b>Date</b>	<b>Time</b>	<b>Topic</b>
May 24	10 am – 12 noon	Let's Preserve (an overview of food preservation)
May 31	10 – 11 am	Storing Fruits and Vegetables
June 7	10 - 11 am	Jams and Jellies
June 14	10 - 11 am	Freezing and Drying of Foods
June 21	10 - 11 am	Canning Carrots, Peas, Beans and other low-acid foods
June 28	10 – 11 am	Canning Tomatoes and Salsa
July 5	10 - 11 am	Fermentation and Pickling
July 12	10 - 11 am	Canning Fruits
July 19	10 - 11 am	Open Line

Also available this summer there will be **online training in food preservation** available through the University of Georgia's National Center for Home Food Preservation. Notice of this training, links to the site and so forth, will be available later this month.

I am combining some programming efforts and I hope to hire an outreach assistant within the next few months. This individual will help me revise the **Master Food Preserver** program, something that I have wanted to do the last few years but have not had the time. While there will be **no** formal master food preserver classes offered this summer, please take advantage of the Wisline programs and the online training.

Another resource for food preservation will continue to be the web site: [www.wisc.edu/foodsafety/](http://www.wisc.edu/foodsafety/) (check out the **food preservation** links to topics on home canning, freezing, etc. **Press releases, fact sheets, and powerpoint** slides are all archived and available for use!)

**What's On Your Mind?**

**Is it Done Yet?** The USDA's Food Safety Education staff is launching a new thermometer education campaign entitled "Is It Done Yet? You Can't Tell By Looking. Use a Food Thermometer To Be Sure!" Food Safety educators are encouraged to participate in this project. The "Is It Done Yet?" campaign will be launched for the July 4th 2005 Holiday season and continue as a multi-year campaign. For more information on the "Is It Done Yet?" campaign, go to: <http://www.foodsafe.msu.edu/> Click on "Outreach." If you would like to be part of this campaign, send an email to USDA: [Holly.McPeak@fsis.usda.gov](mailto:Holly.McPeak@fsis.usda.gov).

**Lemon Curd.** Making a fruit spread is a delicious way of preserving nature's bounty and adding interest to meals. Several kinds of spreads can be prepared - jams, jellies, conserves, butters and curds. They may supplement the breakfast table or can be used as a topping or filling for tea-time treats - pies, tartlets, meringues, cookies, cakes,



muffins, scones and crumpets. Because they are popular holiday treat, several consumers have asked about canning lemon curd. While there are no safe recipes for canning lemon curd at home, the National Center for Home Food Preservation has developed a new fact sheet on safely and successfully **freezing lemon curd**.

A fruit curd is a traditional English spread, made with fruit juice, butter, eggs, sugar and flavorings. The result is a rich, smooth, melt-in-the-mouth blend that is prized in the best year-round or holiday gift-giving tradition. Increasingly, gourmet gift-shops and food stores catering to epicurean tastes stock several flavors of fruit curds including orange, raspberry, strawberry, nectarine, lime, key lime, mango and even banana curd! The most well-known and sought-after variety, however, continues to be the classic 'lemon curd'. Making lemon curd at home is sometimes perceived as a challenge to novice cooks, but once the home-food preserver has mastered the art of making this delicacy, its versatility and the demand for this item will be well worth the effort. Follow this link to step-by-step instructions online:

<http://www.uga.edu/nchfp/publications/nchfp/factsheets/lemoncurd.html> Or for a pdf version of the fact sheet: [http://www.uga.edu/nchfp/publications/nchfp/factsheets/freezer\\_lemoncurd.pdf](http://www.uga.edu/nchfp/publications/nchfp/factsheets/freezer_lemoncurd.pdf)

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