

The Additive Effect of Additives
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Agenda

- Introduction
- Why Additives Are Added
- Overview of Common Additives
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According to Health Canada, a food additive is 'any chemical substance that is added to food during preparation or storage and either becomes a part of the food or affects its characteristics for the purpose of achieving a particular technical effect'

The regulations are spelled out in the Food and Drug Regulations—anything that a food processor is allowed to add to a food product is listed at: www.hc-sc.gc.ca

If a food processor wants to add something that is not listed under the regulations, the processor must submit an application that is reviewed by scientists from Health Canada's food directorate, health products and food branch

One thing to keep in mind: Under the Food and Drug Regulations, the following are not considered to be additives:

- Food ingredients such as salt, sugar and starch
- Vitamins, minerals and amino acids
- Spices, seasonings and flavouring preparations****
- Agricultural chemicals
- **Veterinary drugs ('frankenfish alert')**
- Food packaging materials

Food additives serve FIVE main functions:

- Maintain product consistency
- Improve or preserve the nutrient value
- Maintain the 'wholesomeness' of foods
- Control the acidity and alkalinity, and to provide leavening
- **Provide color and 'enhance' flavor**

Certain **colors** 'improve' the appearance of foods

There are many spices and natural and synthetic flavors that bring out the 'best' in the flavor of food

Almost 100% of all farmed salmon is artificially colored with either canthaxanthin or astaxanthin—a process sometimes euphemistically called 'color finishing'

Swiss chemical giant Hoffman La Roche synthetically produces canthaxanthin and an astaxanthin from petrochemicals and provides customers with its SalmoFan—to help salmon farmers and buyers create and/or order a color that sells well

Color isn't the only additive: Pesticides fed to farmed fish and toxic copper sulfate used to keep nets free of algae are building up in sea-floor sediments

Antibiotics have created resistant strains of disease that infect both wild and domesticated fish

Clouds of sea lice, incubated by captive fish on farms, swarm wild salmon as they swim past on their migration to the ocean

Headliners: 40,000 Salmon Escape From Pens; As reported in The Okanagan Sunday; 10/25/09

Marine Harvest Canada reported 40,000 farmed salmon escaped into open waters through several holes in two holding pens at the aquaculture facility located at Port Elizabeth

Conservationists expressed concerns about spread of disease and sea lice to wild salmon on the B.C. coast

An 'added' concern: Of all the concerns, the biggest turns out to be a problem fish farms were supposed to help alleviate: the depletion of marine life from over-fishing; yet, it takes ~2.4 pounds of wild fish to produce 1 pound of farmed salmon!

Headliners: Super salmon or 'Frankenfish'? FDA to decide ; Jalonick MC; reporting for msnbc.com; accessed on 9/20/10 at: www.msnbc.msn.com/id/39265727/ns/health-food_safety/

An FDA advisory committee is reviewing the science of genetically engineered fish developed by AquaBounty. The Food and Drug Administration held two days' of hearings in September 2010 to consider a request to market genetically modified salmon—the decision is still being made but the agency has already said the salmon, which grow twice as fast as conventional salmon, is as safe to eat as the traditional variety.

Although the potential benefits— and profits—are huge, many individuals have qualms about manipulating the genetic code of other living creatures.

Critics worry the modified salmon—dubbed 'frankenfish'—could cause allergies in humans and lead to the eventual decimation of the wild salmon population.

Current FDA regulations only require modified foods to be labeled as such if the food is substantially different than the conventional version, and the agency has said that the modified salmon is essentially the same as the Atlantic salmon.

According to the FDA, the chances of the altered salmon escaping from production or growing facilities and reproducing are 'extremely small' and the bio-engineered fish are 'effectively sterile'—the company plans to sell only female eggs.

Once numbering an average of 130,000 fish annually in the 1960's, ALL Idaho, Washington and Oregon Coho salmon that depended on the Snake River for spawning are extinct.

Today, most scientists agree that if we do not remove four dams on the Lower Snake River in Eastern Washington soon, Idaho's remaining wild salmon and steelhead will go extinct as soon as 2016.

For More Info:

Idaho Rivers United

(800) 574-7481

www.idahorivers.org

The next time you're in the supermarket, you might spot a juicy, healthy-looking yellow chicken—more likely than not, it has been fed canthaxanthin to enhance the animal's yellow color and make it look palatable.

If you like Yoplait strawberry yogurt, Tropicana grapefruit, orange-strawberry juice, or Hershey's Good & Plenty candies, chances are you will be sucking on the red coloring extracted from the female cochineal beetle and her eggs.

The bugs are collected, dried, and ground into a coloring additive—it takes 70,000 of the insects to make a pound of carmine dye, as it is known.

The FDA considers this agent to be a 'natural ingredient' and does NOT require that this cochineal (also known as 'carmine') be identified in the ingredients—manufacturers simply identify it as an 'artificial color' or 'color added'. The next time you use Betty Crocker icing to frost your cake remember the bright-white color does not come from vigorous whisking of cream and egg whites—rather it comes from titanium dioxide, a mineral that is also used in house paints.

When farmers buy chicken feed for egg-laying hens, they have their pick from a color chart that goes from Nos. 1 to 15, coinciding with colors that change the yolks' shades from yellow to red.

The yellow color comes from xanthophyll and carotenoids in the feed, which is absorbed through the hen's intestine, metabolized, and deposited in the egg yolk.

As for 'Enhancing Flavor'?

The biggest category of food additives is flavorings and flavor enhancers—with sales estimated to be \$1.5+ BILLION in 2006.

Headliners: Flavoring Suspected in Illness; Sonya Geis; staff writer for the Washinton Post; 5/7/07

Food-flavoring workers in California were recently diagnosed with bronchiolitis obliterans—a rare and life threatening lung disease also called "popcorn workers' lung" because of its use in microwavable popcorn.

Irma Ortiz, 44, got popcorn workers lung at a California flavoring plant—she and her husband, Victor Mancia, hope she can get a lung transplant.

Studies incriminate a chemical used in artificial butter flavor—diacetyl.

Headliners: Two Inquiries Look at Threat Diacetyl May Pose to Cooks; Andrew Schneider; senior correspondent; Seattle Post-Intelligencer; 3/17/08

North America's largest union for hotel, restaurant and kitchen workers—UNITE HERE—has called on manufacturers of cooking oils to stop using diacetyl

The union was reacting to a report detailing the results of laboratory analysis of 23 cooking oils, sprays and margarines used by both home and professional cooks

The analysis, conducted by the certified laboratory LabCor, found diacetyl vapors were released in ALL the products when the manufacturer's recommended amount of margarine, oil or spray for a specific recipe was heated

The highest levels of diacetyl were found in the testing of butter-flavored pan, grill and sauté oils used by professional cooks

An extrapolation of the toxic vapors released over a typical four- to five-hour breakfast rush matched or exceeded the diacetyl levels found in some microwave popcorn plants where hundreds of workers were sickened

Two major federal studies confirm that even short exposures to the artificial butter flavoring can cause tissue damage

'The results of the recent studies on diacetyl in cooking oils are extremely alarming and raise the possibility that hundreds of thousands of kitchen workers in our country are at risk every day when they go to work.' --Lynn Woolsey; D-California; chairwoman of the House Subcommittee on Workplace Protections

Even less is known about the health effects of eating diacetyl in butter-flavored popcorn, or breathing the fumes after the bag is microwaved

Headliners: Popcorn's Dark Side; Minkel JR; Scientific American; 12/07

A 53-year-old Colorado man who ate two bags of microwaved popcorn daily for 10 years apparently developed bronchiolitis obliterans

Cecile Rose, a physician specializing in the disorder, alerted the FDA in July 2007 that her patient's Colorado home had diacetyl levels similar to those found in factories

But the news only became public in September 2007 on a health policy blog that accused regulators of ignoring the potential risk to popcorn lovers—four major manufacturers quickly announced they would phase out diacetyl

Headliners: Trial Opens for Worker Who Claims Lung Damage; Molly Matag; reporter; Sioux City Journal; 2/19/09

Ronald Kuiper, an American Pop Corn worker of Sioux City, IA, says in court documents filed in U.S. District Court in Sioux City that he suffered lung damage from working with butter flavors used to make popcorn—the lawsuit claims the flavorings contained diacetyl, which Kuiper said companies knew could cause lung damage
Kuiper says he suffered severe damage to his respiratory system as a result of handling the flavorings, causing extreme shortness of breath and significantly reducing his life expectancy

Headliners: 'Moral Victory' for Sioux City Man Awarded \$7.5 Million in Lawsuit; KTIV.com; 3/13/09

A federal jury awarded \$7.5 million to a Sioux City, IA man for damages suffered while working in a popcorn factory—the verdict in favor of 69-year-old Ronald Kuiper came a day after he died of lung and heart failure
Pop Weaver® was the first microwave popcorn brand to eliminate the flavoring ingredient diacetyl from its microwave popcorn products

Pop Weaver is a leading national brand of microwave popcorn in the U.S. and is one of the largest producers and manufacturers of popcorn products in the world—an 80-year-old, family-owned company, Weaver Popcorn distributes its products in more than 90 countries

'Food' For Thought About Additives

Manufacturers know that if they put 'new' on a package, we are almost always tempted to buy it

Food sellers alone spend ~\$1.5 BILLION annually to introduce 10,000 'new' food products—some with novel additives and many with new combinations of additives

This 'combining of additives' can cause interactions posing health risks

Let's meet a couple of common additives

High Fructose Corn Syrup ('HFCS')

Also appearing on Canadian food labels as fructose-glucose or glucose-fructose (depending on what percentage of fructose is in the product), the process for making the sweetener high fructose corn syrup (HFCS) out of corn was developed in the 1970s

During the late 1990s, use of sugar actually declined as it was eclipsed by HFCS— today Americans consume more HFCS than sugar

In the 30-plus years since it was introduced, HFCS has gone from accounting for less than 1% of caloric sweeteners used in processed food, to representing 42% of added caloric sweeteners mainly because it is cheaper and sweeter HFCS is produced through enzymatic processing where glucose is converted into fructose and mixed with corn syrup

In one of the steps, corn starch must be separated from the corn kernel and something called caustic soda is used—some manufacturing plants use what is called 'mercury-grade' caustic soda

Headliners: Study Finds High-Fructose Corn Syrup Contains Mercury; HealthDay News; 1/26/09; accessed 7/13/10 at: www.washingtonpost.com

According to two recent U.S. studies, almost HALF of tested samples of commercial HFCS contained mercury—which was also found in nearly a THIRD of 55 popular brand-name food and beverage products where HFCS is the first- or second-highest labeled ingredient

American consumers ingest ~12 teaspoons of HFCS daily—teenagers and young children tend to eat more While there is no established safe dose for elemental mercury, the EPA says an average-sized woman should limit her exposure to 5.5 micrograms per day

If that same woman regularly ate HFCS contaminated in the study (0.57 micrograms per gram), the researchers estimate that she could end up consuming FIVE TIMES the mercury that the EPA has labeled safe

KEY POINT: In the end, HFCS is a solution with fructose and glucose (and perhaps a bit of mercury?) as separate molecules, whereas sucrose is a single molecule coupling fructose and glucose

Because of this, there are twice as many molecules of sweetener in a 10 percent solution of HFCS as in a 10 percent solution of sugar—making the fructose in the HFCS solution more available to stimulate the sweet receptors on the tongue

Translation: HFCS may make the soft drinks more desirable for their sweetness than if they were sweetened with ordinary sugar and may also play a role in the way sweetened sodas enhance our desire to eat (or drink) more due to the higher molecular number

HFCS is also very easy to transport--it's just piped into tanker trucks

This translates into lower costs and higher profits for food producers

The Corn Refiners Association and other special interest groups rebut the idea that there is anything wrong with HFCS

They claim there is no difference between HFCS and table sugar because both are made up of about 50 percent fructose and 50 percent glucose

Let's take a closer look at what happens when we ingest HFCS:

Pretty much all of the body's cells come equipped with enzymes that allow them to utilize glucose but the enzyme that metabolizes fructose, called fructokinase, is found exclusively in liver cells

Oversupply the metabolic pathway for fructose and the liver ends up churning out triglycerides — fat that circulates in the blood

Troubles with Fructose: High fructose corn syrup contains a good deal of "free" or unbound fructose—research indicates that this free fructose interferes with the heart's use of key minerals like magnesium, copper and chromium

More Troubles: Fructose converts to fat more than any other sugar

Fructose digestion is very low—for complete internal conversion of fructose into glucose and acetates, it must rob ATP energy stores from the liver

Headliners: Review Blames Obesity Trend on Soft Drinks; AP News Release as reported by Marilyn Marchione; 8/9/06

According to the report, about one-third of all carbohydrate calories in the American diet come from added sweeteners—beverages account for about HALF of this amount

These findings strongly suggest that this sort of increased consumption is a key reason why more people have gained weight--Dr. Frank Hu; American Journal of Clinical Nutrition; 8/8/06

Headliners: Cancer Linked to Soft Drinks; Reported in GLOBE; 3/8/10

A University of Minnesota research team are reporting that people who drink just TWO sodas a WEEK are 87% more likely to get pancreatic cancer!

Experts speculate that ingesting too much sugar (as is the case when drinking soda pop) increases insulin levels which fuel the growth of pancreatic cancer cells

Headliners: How to Use Soft Drinks to Kill Mice and Rats; eHow; 4/28/08; accessed 5/12/08 via www.Mercola.com

Mice and rats lack the ability to burp—making highly carbonated Pepsi or Coke the ideal rodent deterrent The rodents will drink the soft drink and later, when the urge to burp hits, they will...

Headliners: Sugar is Back on Food Labels; Kim Severson; reporting for the New York Times; 3/20/09

It was reported recently that ConAgra, Pepsi, Kraft Foods, Snapple and Pizza Hut are among companies replacing HFCS in select lines of foods with plain, old-fashioned sugar

Sugar manufacturers, who have been fighting their own battle, are enjoying an upsurge as food processors try to sell the public on sugar as the 'healthy' alternative to HFCS

Let's Meet Another Additive: **Trans Fat**

Trans fat comes from adding hydrogen to vegetable oil through a process called hydrogenation

Trans fats are more solid than oil, making them less likely to spoil

Using trans fats in the manufacturing of foods helps foods stay fresh longer, have a longer shelf life and have a less greasy feel

Commercial baked goods (crackers, cookies, cakes, etc.) and many fried foods (doughnuts, french fries, etc.), margarines and shortenings are high in trans fat

Initially, trans fats were thought to be a healthy alternative to animal fats because they are unsaturated and come primarily from plant oils

However, in 1990 scientists made a startling discovery: Trans fats appeared to both increase LDL cholesterol and decrease HDL cholesterol (more studies over the years confirmed this)

Some Other Harmful Effects of Trans Fats:

- Increases triglycerides (contributes to atherosclerosis)
- Increases Lp(a) lipoprotein (a specific 'flavor' of LDL)
- Increases inflammation (trans fats appear to damage endothelial cells)

The Good News: Since January 2006, manufacturers in the U.S. have been required to list trans fat content on nutrition labels—as a result, some companies have changed their manufacturing process to use little or no trans fat

Some Bad News: In the US, the labeling has a loophole—trans fat that has <0.5 grams per serving may be listed as '0 grams' on the label (Multiple serving alert!)

OK, just a little more bad news: Restaurants continue to use trans fat in some areas (especially to fry foods)—a serving of french fries at some restaurants may contain 5+ grams of trans fat!

Trans Fat Limits

- The AHA recommends that no more than 1% of total daily calories be trans fat (example: A 2000 calorie diet should be made up of no more than 2 grams of trans fat)

Headliners: Infertility Tied to Eating Trans Fat; As reported by Jean Carper; USA Weekend; May 18-20, 2007

A Harvard study found that eating too many trans fats could dramatically increase a woman's odds of being infertile

In fact, researchers determined that getting only 2% more calories from trans fats than from monosaturated fats (such as olive oil) more than DOUBLED the risk of infertility

And getting 2% more calories from trans fat than from carbohydrates increased a woman's risk by a whopping 73%!

The researchers theorize that the trans fats adversely affect ovulatory function

Headliners: Nonagenarian Researcher Petitions FDA to Ban Trans Fats; Diana Yates, Life Sciences editor; University of Illinois News Bureau; posted on 9/3/09; accessed 10/29/09 at: www.news.illinois.edu

Fred Kummerow, a 95-year-old University of Illinois veterinary biosciences professor emeritus who still conducts research on the health effects of trans fats in the diet, filed a petition with the FDA in September 2009 to ban trans fats

Although Kummerow began publishing on trans fats in 1957, his efforts against trans fats in food began in earnest in 1968, when he urged the American Heart Association to ask the Institute of Shortening and Edible Oils to have its members decrease the amount of trans fatty acids in shortenings and margarines

CLARIFICATION: The age-adjusted heart disease death rate (all forms of heart disease) has been falling since the 1950s largely due to improved medical treatment—heart disease incidence has not declined substantially (Framingham Heart Study) but we're better at keeping people alive in the 21st century

Fred's Troubling Trans Fat Tidbits:

- Trans fats displace the essential fatty acids linoleic acid (omega-6) and linolenic acid (omega-3)
- In animal studies, mothers fed a high trans fat diet passed it along to their offspring (plasma levels of trans fats increased from 5 percent three days after birth to 15.3 percent at 6 weeks of age)
- Trans fats also interfere with the function of a key enzyme essential to blood flow regulation

Fred Kummerow retired in 1985 at the age of 71 but still comes to work in Burnside's Research Laboratory every day

Was the shift from butter to margarine involved in the CHD epidemic?

There are mechanisms that support a protective role for butter and a detrimental one for margarine—butter from pastured cows is one of the richest known sources of vitamin K2

Research over the last few decades has shown that the role of natural Vitamin K2 (the menaquinones, in particular) has been greatly expanded—K2 is required for calcium utilization (one of the key factors in maintaining both bone and cardiovascular health)

Vitamin K2 plays a central role in protecting against arterial calcification—an integral part of arterial plaque and the best single predictor of cardiovascular death risk

In the early 20th century, butter was typically from pastured cows

Large-scale confinement farms dominate dairy production in the U.S. today—only 10%-15% of U.S. dairy farms are pasture-based

But a growing number of farmers—including Organic Valley farmers—are finding pasture-based farming can also mean healthier cows, more nutritious dairy products, profitable family farms and sustainable land stewardship

Organic Valley
www.organicvalley.coop

Devoted to sustainable, humane practices that have prevented the use of 90,770,797 pounds of toxic chemicals since its inception 20 years ago

In Canada, the **Trans Fat Monitoring Program** has been analyzing a wide variety of foods from restaurants, fast food chains, quick service restaurants, cafeterias located in institutions, establishments serving various ethnic cuisines, as well as pre-packaged foods

The latest data (published 12/09) included the following statistics:

- The nutrition labelling regulations have been effective in motivating manufacturers to reformulate their products—many have reduced the trans fat content of their products to meet the 5% trans fat of total fat content limit
- Some of the small and medium-sized family and quick service restaurants have been successful in reducing the trans fat levels of their products to meet the limits—progress, although slightly slower than other areas of the food service industry, in foods collected from cafeterias located in institutions has also been noted
- Finally, the results continue to show that there are some sectors that face challenges in reducing the trans fat content of their products (bakery products, desserts, and cookies remain high in trans fat)

A word or two on WHY we love our sweets and fats:

Our bodies are living in the past—when eating was unpredictable and caloric intake was usually inadequate

Our bodies recognized something sweet or fatty as an opportunity to load up on energy

Instead of shutting down our appetite for more, sweets and fats stimulate our hunger center causing us to consume as much as possible and store as much energy as we can as body fat—to help us survive when food is scarce

The ONLY thing that has changed is that food is no longer scarce

Additive Headliners of All Kinds

Headliners : Personal Products Might Not Feel All That Soothing; Julie Deardorff; Chicago Tribune; 8/22/06

More than 70,000 chemicals have been introduced since WWII and about 1500 new ones are introduced by industries EACH YEAR—at least 884 chemicals used in personal care products and cosmetics are KNOWN to be toxic --Michael Williams; Information Unit for Conventions at the U.N. Environment Programme; Geneva

A 2004 survey showed that American women use an average of 12 hygiene products each day —translating to more than 150 ingredients being absorbed through the skin, inhaled through the nose or licked off the lips

Environmental Working Group; as reported by Maggie Koerth-Baker; freelance writer for MSN Health & Fitness
For the last several years, cosmetics and personal-care products have been the top substances involved in poisonings--Source: Illinois Poison Center

Cosmetic products and ingredients are NOT subject to pre-market approval by the FDA—with the exception of color additives (beetles anyone?)

That means that only a small percentage of the 10,000+ chemicals in personal care products contain substances that have been tested for safety—and those tests were overseen by industry groups (not the FDA)

‘Nearly 90% of the over 10,000 chemicals used in cosmetics have not been evaluated for safety.’--Stacy Malkan; Campaign for Safe Cosmetics; as reported in Parade; 12/2/07

The FDA cannot demand a product recall and manufacturers do not have to file data on ingredients or report injuries involving additives in beauty products

Hand cream, lotion, shampoo, soap and deodorant are not just potentially dangerous when accidentally ingested by toddlers— researchers recently confirmed that dangers also work from the outside in

Diethanolamine (DEA) is a chemical that is used extensively in shampoos, lotions, creams and other cosmetics

DEA is used widely because it provides a rich lather in shampoos and keeps a favorable consistency in lotions and creams

DEA by itself is not harmful but while sitting on store shelves or in your cabinet at home, DEA can react with other ingredients in the cosmetic formula to form an extremely potent carcinogen called nitrosodiethanolamine (NDEA)

NDEA is readily absorbed through the skin and has been linked with stomach, esophagus, liver and bladder cancers
Recently, DEA was shown to associated with impaired brain development in newborns involving preliminary animal studies

In 1979 the FDA ordered the personal care industry to eliminate NDEA from their products

In 1992, the FDA tested 12 products for NDEA contamination and found that 8 of them still contained this potent carcinogen

Parabens

Parabens are widely used as antimicrobial preservatives in 13,200+ cosmetics, personal care products, pharmaceutical products and food

There are six commonly used forms (Methylparaben, Ethylparaben, p-Propylparaben, Isobutylparaben, n-Butylparaben and Benzylparaben)

According to a recent study, the chemical form of the parabens found in 18 of 20 breast tumors tested indicated that they originated from something applied to the skin—the most likely candidates being

deodorants, antiperspirants, creams, or body sprays --Philippa Darbre, lead researcher and oncology expert; University of Reading; Edinburgh, Scotland

Breast cancer is the most common cancer among women, accounting for nearly one of every three cancers diagnosed in U.S. women

For many years there have been rumors that underarm deodorants and antiperspirants used by millions of women, mainly in the West, might increase the risk of breast cancer. Those rumors were generally viewed as being 'urban legend' and consumer concerns were largely dismissed by experts.

However, from 1998 on, reports started appearing stating that parabens had estrogenic-like activity in mice, in rats, and in human breast cancer cells in the lab.

Since most breast cancers have been linked with heightened activity in the presence of estrogen, the link between deodorants and breast cancer did not seem so outlandish anymore.

Currently, questioning the safety of applying hormone-mimicking compounds to an area so close to the breast appears to have gained some legitimacy.

The presence of intact parabens in tumor tissue shows that these chemicals can not only be absorbed through the skin but can also persist and accumulate in breast cancer tissue in their original form.

'One would expect tumors to occur evenly, with 20% arising in each of the five areas of the breast. But these results help explain why up to 60% of all breast tumors are found in just one-fifth of the breast, the upper-outer quadrant, nearest the underarm.'--Darbre; in an interview with the New Scientist; 1/12/04

Furthermore, it is known that the left breast is more prone to the development of breast cancer than the right breast.

Darbre suggests that this could be due to the fact that the majority of population is right-handed which would result in more chemicals applied to the left underarm area.

Headliners: The Worry Over Lead in Lipsticks; As reported in Parade; 12/2/07

A recent study shows that more than HALF of the 33 red lipsticks tested from drug and department store brands contained detectable levels of lead.

One-third of the lipsticks exceeded the FDA's level for lead in candy.

Among the brands tested that were found to have the highest lead levels were L'Oreal, Cover Girl and Christian Dior – showing that the more expensive brands are no safer than drugstore brands.

The Good News: 39% of the products tested had no detectable levels of lead –proving it IS possible to make lipstick without lead.

Some less expensive brands such as Revlon (\$7.49) had no detectable levels of lead, while some more expensive brands like Dior Addict (\$24.50) had relatively high lead levels.

The Bad News: Consumers without access to laboratory testing cannot determine which lipsticks contain lead and which do not—and lead is NOT listed among the ingredients.

Headliners: FDA: Yes, Lots of Lipsticks Have Lead; Siel Ju; Mother Nature News; as reported in the Idaho Statesman; 9/21/09

The Good News: After the Campaign for Safe Cosmetics 2007 study found lead in most lipsticks, the FDA finally began testing lipsticks.

The Bad News: The FDA found lead at levels FOUR TIMES higher than even what the Campaign for Safe Cosmetics found!

How MUCH lead? The FDA found lead in ALL 20 lipsticks it tested—with the average level being 1.07 ppm (which, incidentally, is 10 TIMES higher than the FDA's 0.1 ppm limit for lead in candy).

The HIGHEST level of lead? The FDA tested one lipstick and found a lead level of 3.06 ppm!!!

The REALLY Bad News: The FDA will not release brand names—despite admitting that THREE specific manufacturers had the highest levels of lead in their lipsticks.

Solution? Look for lipsticks that are specifically labeled 'lead-free'.

Consult Environmental Working Group's Skin Deep cosmetic safety database: <http://ewg.org>

Headliners: Nanoparticles in Cosmetics & Personal Care Products May Have Adverse Environmental Effects

American Chemical Society; 3/27/09; Accessed 7/12/10 at:

<http://www.sciencedaily.com/2009/03/090326162747.htm>

Scientists are reporting that nanoparticles added to cosmetics, sunscreens, and hundreds of other personal care products may pose serious risks for the environment.

Nanotech involves the manipulation of materials and the creation of structures and systems that exist at the scale of atoms and molecules.

Benefits (to name a few...):

- Numerous medical applications (cancer drug delivery system, diagnostic aid [Alzheimer's], generation of neural tissue, etc.)
- Many scientists are looking into way to develop clean, affordable and renewable energy sources (more efficient solar panels, battery innovations, etc.)
- Nanotechnology could help meet the need for affordable clean water through inexpensive water purification (researchers already discovered unexpected magnetic interactions between ultra small specks of rust, which can help remove arsenic from drinking water)

Environmental Hazards:

During the 237th National Meeting of the American Chemical Society, scientists were tasked with trying to understand the environmental and human health effects of nanotech

One of over two dozen papers presented examined what happens to the nano-TiO₂ particles once they go down the drain, enter a municipal sewage treatment plant and exit into lakes, rivers and other water sources where microbes serve essential roles in maintaining a healthy environment

Studying E. coli in a laboratory setting, the study authors were surprised at the large reductions in survival in samples exposed to extremely small concentrations of nano-TiO₂ for less than an hour

'How fast the impact was surprised me.'--Cyndee Gruden, Ph.D.; co-author

Other research groups reported similar findings: many microbes cannot tolerate silver, copper oxide, and zinc oxide nanoparticles—toxicity occurred at concentrations equivalent to 2-3 drops of water in an Olympic-sized swimming pool!

Nanotechnology and Human Health

Research found that nanoparticles have entered just about every personal care product on the market—deodorant, soap, toothpaste, shampoo, hair conditioner, sunscreen, anti-wrinkle cream, moisturizer, foundation, face powder, lipstick, blush, eye shadow, nail polish, perfume, and after-shave lotion

Preliminary studies has shown that MANY types of nanoparticles can be toxic to human tissue and cell cultures

Some Nano-Toxic Findings :

- Increased oxidative stress, inflammatory cytokine production, DNA mutation and cell death upon exposure
- Inhaled carbon nanotubules are being linked to the same type of cancer associated with asbestos: mesothelioma
- Evidence of toxic neural damage

No government regulates nanoparticles but the European Union has at least begun to take action to better understand the risks posed by nanomaterials in cosmetics and personal care products

The EU's Scientific Committee on Consumer Products advised in March 2008 that a review of the safety of nanotechnology is necessary, and current approaches to assess the potential risks of nanomaterials in cosmetics (including sunscreens) is inadequate

Headliners : What do Canadians think about nanotechnology?

While Canadian consumers are generally positive about the technology (with more than half surveyed giving it the thumbs-up), they expressed some reservation about consuming nanoparticles (via food), or placing it directly on their skin

'Those are the areas that are going to be the most sensitive.'--Dr. Elizabeth Nielsen; researcher; nanotechnology report author on for the Consumers Council of Canada

In her report, Dr. Nielsen and the Consumers Council have come up with some recommendations:

- Nanomaterials must be classified and treated as new substances under the Canadian Environmental Protection Act
- Industry Canada should be the lead government agency to develop a national strategy on nanotechnology, to coordinate research and to develop regulations
- Consumer products must be labelled if they contain nanoparticles.
- Policies must be developed to prevent nanotechnologies from adversely affecting human health or the environment
- Consumers must be kept informed about nanotechnology advances and engaged in the development of regulations

- Avoid personal care products that advertise nanotechnology or nano ingredients—difficult to do because no labeling laws exist for nanotechnology

One thing you can do: Contact the customer service department of cosmetics companies who products you use and ask if they use nanotech

One phone number to keep handy:

Consumer Care Centre

L'Oréal Paris

1-888-456-7325

Why?

A comprehensive US report on nanotechnology in cosmetics, entitled 'Beneath the Skin: Hidden liabilities, market risk and drivers of change in the cosmetics and personal care industries', noted that in 2006, cosmetics giant L'Oreal ranked as the 6th most prominent nanotechnology patent holder in the United States—the cosmetic company already uses polymer nanocapsules to deliver active ingredients like retinol or Vitamin A into deeper layers of the skin

Headliners: Disorders Blamed on Denture Cream; Jan Jarvis; reporter; McClatchy Newspapers; appearing in the Idaho Statesman; 2/9/10

An estimated 35 million Americans use adhesives to secure their dentures—most have no health problems associated with the creams

But, according to researchers, some have developed severe neurological problems caused by ingesting high levels of zinc found in some denture adhesives

It is well documented that too much zinc interferes with the absorption of copper into the bloodstream and can lead to neuropathy--Dr. Sharon Nations; associate professor of neurology; University of Texas Southwestern Meet Elizabeth Gilley, 26, who developed neuropathy associated with zinc-containing denture cream usage that left her unable to walk, drive a car or get around without aid

There are hundreds more just like her—over 75 denture cream cases have been consolidated in Florida alone

In January 2010, Health Canada's Adverse Reaction Newsletter noted there have been two reported cases in Canada of numbness or pain in limbs associated with the products since 2006

GlaxoSmithKline, a London-based company reporting \$520+ million U.S. in sales of denture adhesives for 2009, agreed to voluntarily stop manufacturing, distributing and marketing its Poligrip Advanced Care, Extra Strength and Ultra Fresh products in Canada

GSK also introduced a zinc-free Super Poligrip earlier this year:

Proctor and Gamble also introduced a 'new' Fixodent Free formulation—free of artificial colours and flavors but still has zinc

'We [took] these actions because we have become aware of potential health problems associated with the long-term excessive use of our zinc-containing denture adhesive products. However, it is important for consumers to know that these products remain safe to use as directed on the product label.'--GSK spokesperson

A 50-gram tube of denture adhesive should last about four to six weeks—in all of the neuropathy cases attributed to zinc-containing denture creams, users were applying excessive amounts (two tubes a week on average)

Headliners: New Solutions for Unused Drugs; Science News; 4/7/07

A dilute stream of prescription drugs flows through our rivers—pharmacists and governmental agencies want consumers to stop flushing old drugs down the toilet

For the estimated 3%-7% of dispensed medicine that goes unused, pharmacy groups used to recommend 'the flush' to avoid accidental poisoning of curious children and pets

However, research has begun linking waterborne pharmaceuticals—many of which move unchecked through sewage-treatment plants—with reproductive problems in fish and the development of drug-resistant bacteria that can be spread by waterfowl

Headliners: Scientists Find Drugs in Streambeds; As reported in the Idaho Statesman; 5/8/07

Scientists testing the beds of streams around Portland, OR found the residue of the region's medicine cabinets and coffee shops

The list of compounds includes Prozac, Tagamet, Benadryl, and Micatin—as well as the caffeine that makes the Northwest buzz

Researchers are worried because they do not know how these chemicals will affect fish and other life—and they are concerned that bacteria and other organisms will develop resistance to drugs and pesticides
In the 'Did-you-know?' Category: Americans drink more than one billion glasses of tap water per day; children in the first 6 months of life consume seven times as much water per pound as the average American adult

Headliners: Cholesterol Boosts Diesel Toxicity; Andre Nel et al; David Geffen School of Medicine; University of California; as reported in ScienceNews; 8/11/07

Cholesterol poses a cardiovascular risk once it becomes transformed into an inflammatory building block of artery-destroying plaque

That process—which is happening all the time—is triggered by oxidation

A recent study found that breathing nanoscale particles spewed by diesel-fuel combustion may turn on genes that multiply cholesterol's inflammatory and atherosclerotic risks

Nel and his co-workers found that the combination of diesel fume exposure and oxidized cholesterol amped up the activity of 2500+ genes—among them, those whose activity promote inflammation

Nel's team found similar genetic changes in mice engineered to develop high cholesterol, when they were exposed to LA traffic for 5 hours per day, 3 days a week, for 2 months

People who eat fatty foods or who have a genetic predisposition to high cholesterol cannot completely avoid exacerbating pollution from diesel by moving to remote areas

'You probably will be exposed to far more ultrafine [combustion] particles in Los Angeles but emerging data show that once emitted, such particles travel long distances—even across oceans. They're everywhere!'--Nel et al

Headliners: Exhaust Fumes Might Threaten People's Hearts; David Newby et al; Edinburgh University; New England Journal of Medicine; 9/13/07

According to this 2007 study, the nanoparticles from diesel fumes also thwart proteins that dissolve blood clots

It was shown that when people with coronary heart disease (specifically atherosclerosis) exercised in diesel-filled air, their blood vessels did not relax as easily as when they worked out in filtered air

Additionally, their vessels released fewer clot-busting proteins than when they exercised in clean air

The research suggest that people at risk for heart attacks should NOT exercise outside on highly polluted days

Headliners : Nurses May Be At Risk From Chemicals; Blythe Bernhard; St. Louis Dispatch; as reported in the Idaho Statesman; 12/11/07

In a report released in December 2007, nurses exposed to high levels of chemicals and drugs on the job are more likely to report asthma, miscarriages and some cancers

1500+ nurses nationwide were asked about their health histories and on-the-job exposures to cleaning products, radiation, mercury and other hazardous chemicals

Nurses who said they were exposed to high levels of radiation reported a 20% higher rate of breast cancer than nurses with little or no exposure

High levels were defined as exposure at least once a week for 10 years or longer

Asthma rates were up to 50% higher in nurses who reported high exposures to disinfectants, cleansers, and latex

'As nurses, the patient is always first and we don't think about ourselves. It's really time to focus on how to create a healthier workplace for nurses.'--Pamela Levin; nurse and professor; Rush University Medical Center; Chicago, IL

The goal of the nurses' survey is to encourage hospitals to minimize risk to nurses and other health care workers while inspiring further research into hazards in the health care industry

Headliners: Bisphenol-A Blues

Bisphenol A is used to make hard, glasslike plastic containers for food and drink, such as clear Nalgene, sippy cups and baby bottles—it is also used to line aluminum beverage cans

Headliners: Other Overlooked Source of BPA; As reported by Janet Raloff; Science News; 11/7/09

Early data from the Warner Babcock Institute for Green Chemistry ('WBIGC') in Wilmington, MA points to cash register and credit card receipts as potentially rich sources of BPA

Spot checks typically turn up between 60 and 100 mg of BPA per receipt—well above the values measured leaching from plastic foodware

'The biggest [BPA] exposures, in my opinion, will be these cash register receipts.'--John C. Warner; institute co-founder; WBIGC

Because BPA is typically found in printer ink, newspapers and carbonless receipts, most recycled paper (including paper towels and paper used in food containers) contain it--Linda B. White, M.D.

In August 2007, a scientific panel convened by the National Institutes of Health concluded that 'the potential for BPA to impact human health is a concern, and more research is clearly needed'

The same group of scientists, chosen for their expertise on bisphenol A, concluded that a wide range of health problems caused by small doses of the chemical in lab animals 'is a great cause for concern with regard to the potential for similar adverse effects in humans'

According to the scientific panel, 95% of people tested had bisphenol A levels that could be harmful

Many parents with young children are looking into safety concerns over plastic bottles and cups that contain Bisphenol A ('BPA')

According to the panel investigation, BPA may cause infertility, cancer, and developmental problems in children

In April 2008, a report from the National Toxicology Program stated that children absorb more BPA than older people and it is found in the urine of 93% of children under the age of 6

BPA at its current exposure levels affects fetuses, infants and children the most— formula infants are believed to be at the highest risk

This report was one of the first to truly show that even in low doses, BPA can have serious adverse health effects

Subsequent studies demonstrated a link between BPA exposure and obesity—developing pre-fibroblasts are stimulated to become adipocytes and existing fat cells proliferate in the presence of BPA --As reported by Sharon Begley; Newsweek; 9/21/09

Researchers linked prenatal exposure to bisphenol-A with subtle, gender-specific alterations in behavior among 2-year-olds--As reported by Janet Raloff; Science News; 11/7/09

Girls whose mothers had encountered the most BPA early in pregnancy tended to become somewhat more aggressive than normal—boys, on the other hand, tended to become more anxious and withdrawn

The magnitude of these changes is similar to the subtle IQ drops attributable to environmental lead exposures in U.S. children--Bruce Lanphear; Simon Fraser University; Burnaby, Canada

Other BPA Concerns:

In February 2009, researchers reported in Science that plastics used in laboratory equipment can taint complex biological experiments

For instance, pharmacologist Andrew Holt and his team at the University of Alberta recently discovered that chemicals released from disposable plastic test tubes interfered with a Parkinson's drug they were testing While such effects have not been widely studied, Holt and other researchers are advising their colleagues to switch to glass instruments

Early in 2009, the six major baby bottle makers promised to stop using BPA—including Playtex and Gerber Sunoco—one of five BPA makers—now requires companies buying its BPA to sign a promise that they will not use it to make products for children under the age of 3

In June 2009, the Government of Canada moved forward with proposed regulations to prohibit the advertisement, sale and importation of polycarbonate plastic baby bottles that contain BPA to reduce newborn and infant exposure to this substance—the prohibition of polycarbonate baby bottles that contain bisphenol A came into force on March 11, 2010

'Our Government is acting to protect its most vulnerable citizens--newborns and infants. Canada is the first country to move ahead with regulations to prohibit polycarbonate baby bottles that contain bisphenol A. We want parents to feel confident that they can safely bottle-feed their newborns and infants.'-The Honourable Leona Aglukkaq, Minister of Health; 6/09

One more item that contains BPA: Dental sealants

In 1996, Nicolas Olea and coworkers at the University of Granada in Spain reported detectable levels of bisphenol A (BPA) in the saliva of patients treated with dental sealants, suggesting that children receiving this treatment could be exposed to the chemical

These findings and the subsequent clinical recommendations made by the authors, stimulated public concern about this preventive dental treatment

Subsequent studies, culminating with that of Eric Fung and coworkers, indicate that while extremely low levels of BPA can be detected in the saliva of individuals treated with selected dental resins in the hours immediately following application, no BPA was detected in the blood stream

A review of key studies on dental resins containing BPA-based materials reveals that the highest reported acute oral exposure to BPA is more than 50,000 times lower than levels shown to cause acute oral toxicity in animal studies

Consequently, it appears exposure to BPA from dental resins for both adults and children is minimal and poses no known risk to human health

A study published in the Journal of the American Dental Association (JADA) in 2006 found that some dental products leach BPA and could result in low-dose exposures within the range in which health effects have been seen—in a busy cosmetic practice, dentists, hygienists and dental team members placing composite restorations and sealants all day may be exposed to hazardous materials

Headliners: Is Plastic Destroying Our Oceans?; Parade; 3/30/08

A giant field of plastic trash that is TWICE the size of the continental United States is currently floating in the Pacific Ocean

Stretching from our West Coast to Japan, this man-made mess is severely affecting the Pacific's ecosystem Experts say that dangerous chemicals from industrial waste (such as PCB's) stick to any plastics in the water — which are then ingested by marine life and birds

ANY plastic going into streams, creeks and rivers or left on beaches or tossed from boats ends up in the ocean 'There is technology to get rid of plastic. The only solution: stop adding it to the ocean.' --Marcus Erikson; Algalita Marine Research Foundation

The number of plastic bags given out in 9 major supermarkets in England is ~17.5 billion EVERY year—enough to cover Great Britain within 21 years!

Plastic bag litter kills 100,000+ birds, whales, seals and turtles every year—when the dead animal decays, the plastic is freed up to be reingested

Some countries already have announced bans on free plastic bags

Headliners : Plastic Bags Pose Threat to Giant Turtles; Randy Boswell; reporting for Canwest News Service; Calgary Herald; 3/20/09

It's been around for 100 million years - a giant reptile that has long outlived its distant dinosaur cousins, can weigh more than a Smart car and accumulate nearly as much mileage every year

But a new study of the endangered leatherback turtle by three Canadian scientists has, for the first time, documented how one of the world's most majestic and enduring species (and one only recently shown to inhabit key feeding grounds along Canada's Atlantic shore) is being seriously threatened by the lowliest artifact of modern consumer culture: the plastic bag

Tragically, the biggest member of the turtle family is prone to mistaking the discarded bags that litter the world's oceans with jellyfish—its only source of food

The researchers' analysis of nearly 400 turtle autopsies conducted since 1968 showed that 37.2% of the dead leatherbacks examined had ingested some form of plastic--mostly bags, but also fishing lines, balloons, picnic cutlery and candy wrappers

In some cases, the plastic posed such an obstruction to digesting food that it was considered the direct cause of death—but the scientists observed that even non-lethal amounts of plastic 'by reducing the extent of the gut from which absorption (of nutrients) can occur, may well impair health and reproduction'

'The frustrating, yet hopeful aspect is that humans can easily begin addressing the solution, without major lifestyle changes. It's as simple as reducing packaging and moving toward alternative, biodegradable materials and recycling.'

What does this all mean???

We need to stay abreast of food and product recalls—know the 'WHY' behind the concern

Check ingredients in ANY product recommended in the practice setting—look carefully for alcohol content

And, lastly, we need to nourish ourselves to live the best life we can and encourage those we care for to do the same!

THANK YOU!