

# Environmental Toxins

Action Group Project

NH Leadership Series 2008-2009



# Group Members

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# Our Issue



- What is the impact of environmental factors on our health and on the incidence of disability?

# Our Action Group's Process



- Initial Idea – THINK BIG
  - Greenhouse
  - School Lunch Program
- Refined Idea
  - Reach a broad and diverse audience through various media
  - Focus on creating awareness
  - Prevention

# Environmental Toxins – Possible Link to Disability in Children



- Exposure to hazardous environmental toxins such as lead, mercury and pesticides can negatively impact:
  - Development
  - Learning
  - Behavior(Antoniadis, Gilbert & Wagner, 2006)
- “Children are uniquely susceptible to hazardous environmental exposures – they are NOT little adults.”  
(National Academy of Sciences, 1993)

# Children vs. Adults



- Most significant difference between children and adults = **blood brain barrier** (*a structure in the CNS that prevents the passage of chemical substances between the bloodstream and the neural tissue*)
  - The blood brain barrier in a child is immature compared to that of the adult
  - This structure is not fully developed until after 6 months of age
  - The developing human brain = *much more vulnerable to toxicity than the mature brain*
- A child's brain continues to develop until the age of **20** when it attains its maximum weight

(Antoniadis, Gilbert & Wagner, 2006)

# Environmental Toxins - Possible Link to Disability



“Neurotoxicants such as lead, mercury and pesticides can have a particularly detrimental impact on brain function and in turn lead to the expression of learning and developmental disabilities, including speech, language and hearing disorders” (Miller & Snow, 2004; Schettler, Stein, Reich, Valenti & Wallinga, 2000).

# The Precautionary Principle: An Introduction



- There are hundreds of neurotoxicants that have NOT been thoroughly tested!!
- Yet...It is our ethical responsibility to protect our children (Gilbert, 2005).
- The *Precautionary principle* has been implemented by environmentalists and public health officials to target this discrepancy.

# The Precautionary Principle



*“When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action. (Science and Environmental Health Network, 1998).*”

# Our Mission



- Prevention!
- Bring awareness to the public regarding the dangers of neurotoxicants such as pesticides.
- Reach multiple audiences.
- Provide information that is easy to understand and is readily accessible.
- Break down complex food labels so you can make healthy choices for yourself and your family members.

# Step 1: The Dirty Dozen



- What is it?
  - A list of 12 fruits and vegetables that should be purchased in the organic form as recommended by the Environmental Working Group (EWG)
  - An analysis of the results obtained from over 100,000 U.S. government pesticide tests was conducted
    - Test results indicated that conventionally grown fruits and vegetables contain pesticides
    - Even after washing, some fruits and vegetables maintain higher levels of pesticide residue than others

# Pesticide Facts



## Peaches

“ 1 out of every 4 times a child under the age of six eats peaches, he/she is exposed to an unsafe dose of organophosphate insecticides.”

## Apples

“Apples and apple products account for over ½ of the unsafe organophosphate insecticide exposure for children under the age of six.”

(Environmental Working Group, USDA food consumption data 1989-1995)

# ...So Buy Organic!

## The Dirty Dozen



- **MUST-buy organic foods include:**

1. Peach

2. Apple

3. Bell Pepper

4. Celery

5. Nectarine

6. Strawberries

7. Cherries

8. Kale

9. Lettuce

10. Grapes (Imported,  
Chile)

11. Carrot

12. Pear

# No need for Organic

(Save your \$\$ for the dirty 12)



- **Fruit**

- Bananas
- Kiwi
- Mangoes
- Papaya
- Pineapple

- **Veggies**

- Asparagus
- Avocado
- Broccoli
- Cauliflower
- Corn
- Onions
- Peas

# How Do I Remember the Dirty Dozen List?



- Product #1: Dirty Dozen Wallet-sized Card!
  - Contains the list of the dirty dozen
  - Keep it in your wallet
  - Share the information with friends and family members

# Buying Organic Tips



1. Buy produce in season
2. BUY LOCAL
3. Shop at Farmers' Markets
4. Comparison shop in area grocery stores to find the best deals
5. Buy frozen produce that is *flash frozen*

# Protect yourself from pesticides!



1. Trim tops of leafy veggies such as celery and lettuce
2. Peel and cook veggies when possible
3. Eating a wide variety of produce limits exposure to any one type of pesticide
4. Buy produce that is grown under USDA regulations

## Step 2. Understanding Food Labels

Reading food labels can be **confusing** and very **misleading**.



• Most people don't read the small print and instead focus on the **LARGE** label on the front.

• This is exactly what the manufacturing and food industry wants you to read!

Examples of Front label terms:

- Fortified with calcium
- Nutritious!
- Helps reduce cholesterol
- No fat
- Low sodium
- No artificial coloring

# Reading the Label Guidelines



1. Look for natural ingredient names that you understand.
2. First ingredient listed = largest percentage of the food.
3. Notice the difference in length of non-organic ingredients compared to organic ingredients. (If the organic label does happen to be long, it's typically due to the word ***organic*** in front of every ingredient).
4. The least amount of ingredients the **better**.
5. The ingredients on food labels are the most important items you will read on a product. Yet, some ingredients are so small you can barely read them without glasses.

**Note:** *These are only a few of the additives and preservatives that are in products we consume. For a more complete list and to do further research, please see our resources and links page.*

So, what are you eating and how does it effect you?

Let us show you.....



Yes, it's that scary!

### **Artificial Coloring (Food Dyes)**

**Blue 1 & 2, Red 3 & 40, Yellow 5 & 6, Green 3**

New studies now point to synthetic preservatives and artificial coloring agents as aggravating ADD & ADHD symptoms, both in those affected by these disorders and in the general population. They have also been linked to anxiety, migraines, clinical depression, blurred vision, itching, general weakness, heatwaves, feeling of suffocation, purple skin patches, and sleep disturbance. In children, asthma attacks and hives have been claimed, as well as supposed links to thyroid tumors, brain tumors, bladder tumors, chromosomal damage, and hyperactivity.

### **Monosodium Glutamate (MSG)**

MSG is used as a flavor enhancer in many packaged foods, including soups, salad dressings, sausages, hot dogs, canned tuna, potato chips and many more. MSG is used as a flavor which can leave people with headaches, nausea or vomiting, numbness, burning sensation, tingling, facial pressure or tightness, chest pain, rapid heartbeat, drowsiness, weakness, difficulty breathing for asthmatics.

## **BHT (butylhydroxytoluene), BHA (Butylated hydroxyanisole)**

Are primarily used as an antioxidant food additive. Also used in cosmetics, pharmaceuticals, jet fuels, rubber, petroleum products, electrical transformer oil, and embalming fluid. Used commonly in cereals, chewing gum, vegetable oil and potato chips (and also in some food packaging to preserve freshness) BHT could produce hyperactivity in some children. It is metabolized by the liver and some rat experiments showed a suppression of liver enzymes and enlargement of the liver. Other studies showed these preservatives to cause cancer in rats.

## **TBHQ (tertiary butylhydroquinone)**

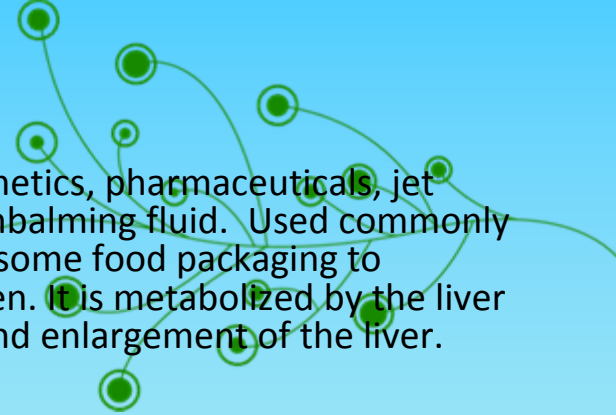
It is added to a wide range of foods, with highest limits permitted for frozen fish and fish products. Its primary advantage is enhancing storage life. In high doses, lab animals have developed stomach tumors and damage to their DNA. A number of studies have shown that prolonged exposure to TBHQ may induce carcinogenicity.

## **Hydrogenated Vegetable Oil**

The process used to make hydrogenated vegetable oil (or partially hydrogenated vegetable oil) creates trans fats, which promote heart disease, diabetes. Trans fats also increase your risk of Alzheimer Disease, cancer, obesity, liver dysfunction. You can find this in some margarine, vegetable shortening, crackers, cookies, baked goods, salad dressings, bread and more. It's used because it reduces cost and increases the shelf life and flavor stability of foods.

## **High Fructose Corn Syrup**

High-fructose corn syrup is a common sweetener and preservative. High-fructose corn syrup is made by changing the sugar (glucose) in cornstarch to fructose, another form of sugar. The end product is a combination of fructose and glucose. Because it extends the shelf life of processed foods and is cheaper than sugar, high-fructose corn syrup has become a popular ingredient in many sodas, fruit-flavored drinks and other processed foods. It has the potential to promote obesity. Which, in turn, promotes conditions such as type 2 diabetes, high blood pressure and coronary artery disease.



## **Olestra**

Is a fat substitute used in crackers and potato chips, marketed under the brand name Olean. It has been used in the preparation of traditionally high-fat foods, thereby lowering or eliminating their fat content. This synthetic fat is not absorbed by the body, so it can cause diarrhea, loose stools, abdominal cramps and flatulence, along with other effects. Further, olestra reduces the body's ability to absorb beneficial fat-soluble nutrients, including lycopene, lutein and beta-carotene. The substance is not approved for use in the European Union or Canada.

## **Acesulfame-K**

Is an artificial sweetener that's about 180-200 times sweeter than sugar. It's used in baked goods, chewing gum, gelatin desserts and soft drinks. Two rat studies have found that this substance may cause cancer. Acesulfame-K also breaks down into acetoacetamide, which has been found to affect the thyroid in rats, rabbits and dogs. Acesulfame K apparently produced lung tumors, breast tumors, rare types of tumors of other organs (such as the thymus gland), several forms of leukemia and chronic respiratory disease in several rodent studies. However, other rodent studies have shown no increased incidence of tumors in response to administration of acesulfame K.

## **Aspartame (Equal, NutraSweet)**

The aspartame that's used to sweeten it increases lymphomas, leukemia and brain tumors in rats, even in small doses as far back as the 1970s. This artificial sweetener is found in Equal and NutraSweet, along with products that contain them (diet sodas and other low-cal and diet foods).

People who are sensitive to aspartame may also suffer from headaches, dizziness and hallucinations after consuming it.

## **Propyl Gallate** (any word with "Propyl")

This preservative, used to prevent fats and oils to prevent oxidation. It's used in vegetable oil, meat products, potato sticks, chicken soup base and chewing gum, and is often used with BHA and BHT. Studies found this compound to mimic estrogen similar to other xenoestrogens. This may result in male organisms developing female traits. Increased estrogen is often associated with increased risk of developing cancer in estrogen-sensitive tissues such as ovary, breast, prostate, etc.

# Large Group Discussion



- Do you feel you have a better understanding of the additives and preservatives in the foods we eat?
  - The next few pages are a few products that we as consumers may have purchased for ourselves or families.
  - They are broken down by **Non-Organic** and **Organic**.
- Can you find any of the *additives* and *preservatives* mentioned earlier in these products? If so, is it one or two ingredients or multiple ingredients?
- How many of these additives and preservatives are you and your family members consuming a day?



# Ingredients

## **Apple Jacks**

**Ingredients:** SUGAR, CORN FLOUR, WHEAT FLOUR, OAT FLOUR, SALT, MILLED CORN, DRIED APPLES, APPLE JUICE CONCENTRATE, MODIFIED CORN STARCH, CINNAMON, SODIUM ASCORBATE AND ASCORBIC ACID (VITAMIN C), *YELLOW #6*, NIACINAMIDE, REDUCED IRON, ZINC OXIDE, BAKING SODA, PYRIDOXINE HYDROCHLORIDE (VITAMIN B6), TURMERIC COLOR, CALCIUM PHOSPHATE, RIBOFLAVIN (VITAMIN B2), THIAMIN HYDROCHLORIDE (VITAMIN B1), *RED #40*, VITAMIN A PALMITATE, *BLUE #1*, *BHT* (*PRESERVATIVE*), FOLIC ACID, VITAMIN D AND VITAMIN B12.

## **Lipton Noodle Soup**

**Ingredients:** Enriched Egg Noodle Product (Wheat Flour, Eggs. Niacin, Iron, Thiamin Mononitrate Vitamin B1). Riboflavin (Vitamin B2). Folic Acid), Corn Syrup\*, Salt, Partially Hydrogenated Soybean Oil, Monosodium Glutamate, Chicken Fat, Chicken\*, Hydrolyzed Soy Protein, Yeast Extract, Corn Starch, Parsley\*, Disodium Inosinate, Disodium Guanylate, Turmeric, Natural Flavors, Chicken Broth\*, Onion Powder \*Dried

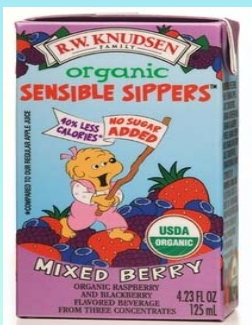
## **Kraft Macaroni & Cheese**

**Ingredients:** ENRICHED MACARONI PRODUCT (DURUM WHEAT FLOUR, WHEAT FLOUR, NIACIN, FERROUS SULFATE, THIAMIN MONONITRATE [VITAMIN B1], RIBOFLAVIN [VITAMIN B2], FOLIC ACID), CHEESE SAUCE MIX (WHEY, MILKFAT, MILK PROTEIN CONCENTRATE, SALT, CALCIUM CARBONATE, *SODIUM TRIPOLYPHOSPHATE*, CONTAINS LESS THAN 2% OF CITRIC ACID, SODIUM PHOSPHATE, LACTIC ACID, MILK, *YELLOW 5*, *YELLOW 6*, ENZYMES, CHEESE CULTURE).

## **Kool-Aid Jammers**

**Ingredients:** Water, *High Fructose Corn Syrup*, Pear Juice from Concentrate, Contains Less than 2% of Ascorbic Acid (Vitamin C), *Artificial Flavor*, Citric Acid, Sodium Citrate, Calcium Disodium, EDTA (Preserve Freshness), *Red 40*, *Blue 1*

# Organic



# Ingredients



## **Gorilla Munch**

**Ingredients:** Organic corn meal, organic evaporated cane juice, sea salt.

## **Health Valley Organic Soup**

**Ingredients:** FILTERED WATER, ORGANIC DARK MEAT CHICKEN (INCLUDED WATER, ORGANIC CORN STARCH, SALT), ORGANIC CARROTS, ORGANIC CELERY. ORGANIC PASTA (ORGANIC SEMOLINA WHEAT FLOUR, ORGANIC EGGS, ORGANIC EGG WHITES), ORGANIC RICE STARCH, ORGANIC CHICKEN BROTH CONCENTRATE (INCLUDES ORGANIC CHICKEN BROTH, ORGANIC CHICKEN FLAVOR (ORGANIC CHICKEN MEAT, SALT), ORGANIC CHICKEN FAT, ORGANIC SOY SAUCE [(WATER, ORGANIC SOY BEANS, SALT), ORGANIC MALTODEXTRIN], YEAST EXTRACT, ORGANIC CANOLA OIL, ORGANIC ONIONS, ORGANIC FLAVOR, FLAVORS, SEA SALT, ORGANIC ONION POWDER, ORGANIC TURMERIC FOR COLOR, ORGANIC SPICES.

## **Annie's Elbows & Four Cheese Sauce**

**INGREDIENTS:** ORGANIC PASTA (ORGANIC DURUM SEMOLINA, WATER), CHEESE (CHEDDAR, ASIAGO, PARMESAN AND MONTEREY JACK [PASTEURIZED MILK, CHEESE CULTURE, SALT, ENZYMES]), WATER, CREAM, WHEY, SODIUM PHOSPHATE, SALT, NATURAL FLAVORS, LACTIC ACID, SODIUM ALGINATE, ANNATTO EXTRACT (COLOR).

## **Garden of Eden Taco Dinner Kit**

**Ingredients: Taco Shells:** organic stoneground yellow corn masa flour, expeller pressed canola oil and/or safflower oil and/or sunflower oil.

**Taco Sauce:** organic tomatoes, organic green chili, water, jalapeno, lime juice ,garlic powder, salt.

**Taco Seasoning:** organic rice flour, sea salt, spices, organic evaporated cane juice, organic onion powder, paprika, organic garlic powder, dehydrated onion, citric acid, organic sunflower oil, extractive of paprika, yeast extract, silicon dioxide (as anticaking).

# UPC Codes on Produce



Produce now carry a sticker called “**price look-up codes (PLUs)**”. These stickers tell you how fruits and vegetables were grown.

| Organically       | Conventionally         | Genetically Modified |
|-------------------|------------------------|----------------------|
| 5 digits          | 4 digits               | 5 digits             |
| Starting w/ no. 9 | Starting w/ no. 3 or 4 | Starting w/ no. 8    |

**Organically Grown** – is a form of agriculture that relies on crop rotation, green manure, compost, biological pest control, and mechanical cultivation to maintain soil productivity and control pests, excluding or strictly limiting the use of synthetic fertilizers and synthetic pesticides, plant growth regulators, livestock feed additives, and genetically modified organisms.

**Conventionally Grown** - often use fertilizers and pesticides which allow for higher yield, out of season growth, greater resistance, greater longevity and a generally greater mass.

**Genetically Modified** - are genetically engineered to contain one or more genes of another species. The aim is to introduce a new trait to the plant species which does not occur naturally in this species, for example resistance to certain pests, diseases or environmental conditions, or the production of a certain nutrient or pharmaceutical agent.

# Step 3: Share a Personal Story



- This is Zachary
- He's 9 years old
- He loves to eat and seems to require a lot of food.
- What happened when he was 2 years old
- Joining the Feingold Association
- Dramatic behavioral changes
- Challenge: teaching him how to make better food choices when making decisions for himself
- Discoveries along the way

# It Tastes Great!



# Zach's Snacks

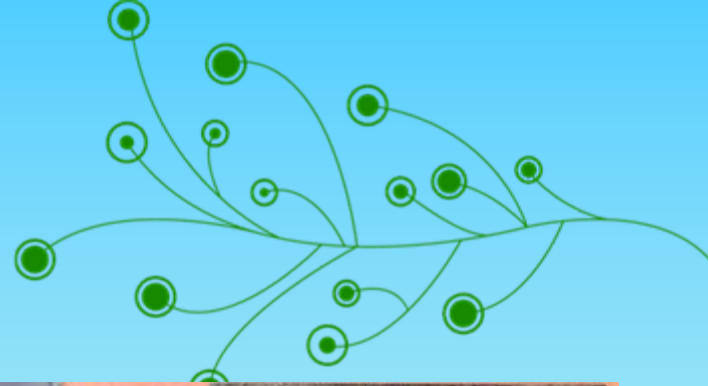


- What will he eat? The journey begins
- Where we buy the “good” stuff
- Does it really cost more to buy natural and organic food?
- Options: Grocery stores, farmer’s markets, health food stores, food co-ops, etc.
- Pro’s and Con’s
- How Zach sees it
- Navigating birthday parties, holidays and special events

# Contraband



# A Happy Child



# Step 4: Publish Articles



- **Author:** Linda Beausoleil
  - **Article title:** *Childhood Illnesses and the Environment – Could There Be a Link?*
  - Coming soon to *Kidz Rule USA's* new bi-weekly "ezine"
  - - To sign-up go to [www.kidzruleusa.com](http://www.kidzruleusa.com)
  - Also keep an eye out for the article in *Parenting New Hampshire!!*

# Resources



- Antoniadis, A., Gilbert, S., & Wagner, M. (2006). Neurotoxicants: Environmental Contributors to Disability in Children. *The ASHA Leader*, September 26, 2006.
- Gilbert, S.G. (2005). Ethical, legal, and social issues: Our children's future. *NeuroToxicology*, 26, 521-530.
- Schettler, T., Stein, J., Reich, F., Valenti, M., & Wallinga, D. (2000). In harm's way: Toxic threats to child development. Cambridge, MA: Greater Boston Physicians for Social Responsibility.
- Science and Environmental Health Network. (1998, January). Wingspread statement on the precautionary principle. [www.sehn.org/precaution.html](http://www.sehn.org/precaution.html).

# Resources (cont'd)



- <http://en.wikipedia.org>
- [www.live-the-organic-life.com](http://www.live-the-organic-life.com)
- [www.feingold.org](http://www.feingold.org)
- [www.msgtruth.org](http://www.msgtruth.org)
- EWG.org
- <http://www.webmd.com/add-adhd/news/20040524/food-additives-may-affect-kids-hyperactivity>
- <http://www.jstor.org/pss/3454535>