GETTING THE "DIRT" ON WHAT'S IN YOUR FERTILIZER
Answers to Gardeners' Basic Questions

How do I know if I need fertilizer?

Home gardeners and farmers alike rely on soil tests to tell them if their soil is deficient in macronutrients (nitrogen, phosphorus and potassium). Testing can be done through county extension agencies, laboratories or even home test kits.

You may need fertilizer to replace lost soil nutrients, or to add minerals that are missing, in order to grow healthier plants.

In addition to the "N-P-K" (nitrogen - phosphorus - potassium) fertilizers with which many people are familiar, there are also "micronutrient" fertilizers, which are intended to supply other minerals that certain plants require. Some of these minerals include boron, copper and zinc.

These tests also determine the relative alkalinity or acidity of the soil, which affects the rate of nutrient absorption. A pH of 7.0 is neutral, and in wetter regions of the country, like Minnesota, soil often tends to be more acidic. In that case, "ag lime," or calcium carbonate, is often recommended.

"Ag lime" may actually be the recycled lime from pollution control equipment or scrubbers from steel, copper or aluminum smelters or other industries. In that application, lime is used to capture heavy metals and other pollutants before they enter the atmosphere.

How do I find out what is in my fertilizer?

Reading the label will only tell you the beneficial ingredients -- the reason you bought the product in the first place. However, just as pesticide products contain much more than just the active ingredient that kills the target pest or weed, fertilizers can and do sometimes contain many *additional* ingredients.

Is there any way to tell that a fertilizer contains heavy metals or dioxins?

There is no way to tell simply by looking at a fertilizer that it contains heavy metals or dioxins. Some laboratories are equipped to analyze the total metal content of the product for a variety of metals, including cadmium, chromium, lead and mercury. This test is relatively inexpensive -- around $100 per sample tested. Fertilizer companies could require their suppliers to run these more complete analyses and eliminate those with levels of metals beyond the average levels existing naturally in the environment. (They are

already required to prove that their product contains a specific amount of *beneficial* ingredient.)

Dioxin tests are much more expensive -- more than $1000 each. However, because of dioxin's extreme toxicity, suppliers of "ag lime equivalents" should be required to prove that their lime does not come from scrubbers (pollution control equipment on smokestacks, meant to capture pollutants so that they don't enter the atmosphere). Lime from scrubbers or cement kilns is likely to contain dioxin and should not be used.

Why isn't this information on the product label?

Minnesota law currently states that the product label "guarantee plant nutrients other than nitrogen, phosphorus and potassium only if allowed or required by [the Department of Agriculture] commissioner's rule."[1] Currently, the commissioner does not require the label to contain the complete list of ingredients, so farmers and gardeners don't know what else they're getting.

TAG-ALONG TOXICS

POLLUTANT	PLANTS THAT MAY ABSORB TOXINS	POTENTIAL HEALTH EFFECTS
Arsenic (Ar)	Carrots, onions, potatoes & other root crops	Known carcinogen; fatal at 60 ppm; lower levels can cause nausea, affect blood cell count & blood vessels
Cadmium (Cd)	Lettuce, corn, wheat	Possible carcinogen; can damage kidneys, lungs & bones at low levels
Chromium (Cr)	Celery[2]	Hexavalent chromium linked to kidney, liver, lung, nose and stomach damage
Dioxins	Zucchini, pumpkin, cucumber, carrots, lettuce, peas	Known carcinogen; linked to infertility, birth defects, immune system suppression, learning disabilities
Lead (Pb)	Fruits and grains	Probable carcinogen, affects growth & neurological development, kidneys & immune system
Mercury (Hg)	Spinach[3]	Possible carcinogen; affects nervous system & brain development, kidneys & digestive system

Adapted from Table 3-4, *Waste Lands: The Threat of Toxic Fertilizer*, Matthew Shaffer, CALPIRG Charitable Trust and the State PIRGS. 2001. P. 15.

How do these toxins get into the fertilizer?

Heavy metals do occur naturally in the environment. For example, some rock phosphate fertilizers are high in cadmium that occurs naturally in the ore that is extracted from the earth.

However, many micronutrient fertilizers contain heavy metals and dioxins that come from the "recycling" of hazardous industrial waste. These operations may include aluminum or copper smelting; the manufacture of cement (which may burn hazardous waste as a fuel source); and steel production.

What can I do to protect myself and my family from toxic fertilizer?

1) **Ask questions** when shopping for fertilizer products at garden centers and nurseries. Staff should be knowledgeable about the products sold. If not, consider shopping elsewhere.

2) **Contact manufacturers and distributors**. Reputable companies will be happy to provide laboratory analyses and other information about where they obtain the ingredients for their products. Ask them to voluntarily provide full disclosure on their product labels, as we work for mandatory labeling requirements.

3) **Use products approved for certified organic crop production.** The Organic Materials Review Institute is the non-profit organization that conducts research on materials used in the production, processing and handling of organic agricultural products and creates and distributes lists of what can and cannot be used.

   Organic Materials Review Institute
   PO Box 115588
   Eugene, OR
   Ph: 541-343-7600 F: 541-343-8971
   Email: info@omri.org
   www.omri.org

4) **Contact the Commissioner of the Minnesota Department of Agriculture** to urge the disclosure on product labels of all fertilizer ingredients and urge his enforcement of the prohibition of sales of adulterated fertilizers.

   Commissioner Gene Hugoson
   Minnesota Department of Agriculture
   90 West Plato Boulevard
   Saint Paul, Minnesota 55107
   651-297-2200/ 1-800-967-2474 • TTY: 1-800-627-3529

5) Learn more. Here are some resources for more information:

Washington [State] Toxics Coalition:
Erika Schreder or Laurie Valeriano
4649 Sunnyside Avenue North, Suite 540 E
Seattle, WA 98103
Ph: 206-632-1545
www.watoxics.org/tf.html

Fateful Harvest: The True Story of a Small Town, a Global Industry, and a Toxic Secret, by Duff Wilson. Harper Collins. 2001.
ISBN#: 0060193697

Institute for Agriculture and Trade Policy
Jackie Hunt Christensen
2105 1st Avenue South
Minneapolis, MN 55404
Ph: 612-870-3424
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www.iatp.org

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[1] Minnesota Statute Chapter 18C.211; 2001. http://www.revisor.leg.state.mn.us/stats/18C/211.html
[2] "Analysis of Dietary Intake of Selected Metals in the NHEXAS-Maryland Investigation," P. Barry Ryan, Kelly A. Scanlon and David L. MacIntosh. *Environmental Health Perspectives*. Volume 109, Number 2, February 2001.
[3] *Catching the Limit*. Environmental Working Group, Washington, DC. December 1997.