

More ideas that have come to me:

- \* To help minimize auto traffic, folks working via computer, may do it from home, instead of having to drive in each day.
- \* Implementing a 4 day work week with 10 hour days, with 2 15 minute and 1 30 minute break. This will be beneficial for the environment, and the individual's health and well-being. Both of these proposals will give folks more time with their families.
- \* Ban the use of gasoline powered leaf blowers, and lawn mowers. We can use a broom, and rechargeable electric mowers or blowers.
- \* The use of chemical pesticides and other petrol chemical products are adversely effecting household pets, and destroying our valuable pollinators.
- \* Planting of male ginkgo trees as street trees, as they provide the highest oxygen of any tree, and the leaf is medicinal for human consumption. They are slow growers, though a valuable gift to the city.
- \* All city landscape plantings having a dual purpose, to provide food for humans and wildlife, and to focus on natives and hardy perennials.
- \* Each neighborhood with a community gathering space for free weekly potlucks, dancing, music, and a variety of ways to exchange with one another.
- \* Allowing water catchment for homes, with the use of proper filtration.
- \* Allowing the re-use of gray water in the garden, provided that only bio-degradeable products are used.
- \* Discontinuing the use of chlorine and the other many chemicals added to our Bull Run drinking water, and use filtration technologies.
- \* The fungi "King Stropharia" has been proven to cleanse water of all toxic impurities when the water passes through its mycelium.
- \* Offer incentives for the use of "on-command" water heaters, and having them more affordable.
- \* Encourage the importation of foreign motor vehicles with 80 miles to a gallon.
- \* The use of gasoline or bio-diesel, can be improved upon...
- \* Incentives and encouragement for more organic farmers, so Oregon can provide for itself, instead of being so dependant on unstable California, or other import fruits and vegetables.
- \* Encourage crops of bamboo, flax, and industrial hemp for fibre, oil, and the many other gifts these plants provide.
- \* We have our own natural gas available to us. To import is wasteful of resources, and potentially dangerous.
- \* There are many great minds to unite in the betterment of our life here together.

To Sam Adams, and all others,

Here is a list of suggestions I think worthy of consideration.

Thank you for being open and receptive, Carol van Dyke

- \* Space is created and provided for all to have a garden to tend.
- \* Encourage urban farming.
- \* Gardening is a part of all schools' curriculum.
- \* Provide folks in prison the ability to grow organic gardens to give them good food, and a renewed sense of self-worth.
- \* Prince Charles of England is an advocate of organic gardening. His estate in Gloucestershire is organic and produces breads, biscuits, and other goods for sale.
- \* In Ireland, Scotland, England, France,... the wild ponies and horses live safely in national parks. We too can provide sanctuary for our wild horses in this country.
- \* A strong solution of vinegar to be used as an herbicide.
- \* Ban all chemical pesticides, as the river is effected, as well as the water table. Permit only organic methods.
- \* Ban fireworks displays over the river, to support a clean river.
- \* Sewage, yard debris, kitchen scraps - compost to create methane. Use existing natural gas lines to provide methane fuel to homes and businesses for heat and cooking fuel. Electricity is created as well.
- \* Gray water must be filtered and reused for commercial purposes.
- \* Keep our drinking water free of fluoridation, as it is toxic.
- \* Link with Port of Portland, as they are implementing a porous pavement, and other ways to help the environment.
- \* Focus on mass transport powered by solar electric, and magnetics.
- \* The use of "Nanosolar" technology has great potential in many ways.
- \* Tax rebate for use of alternative energy sources in home and business.
- \* Affordable health and dental care, provided on a sliding fee.
- \* Providing safe haven for the homeless. Everyone has a home regardless of their financial state.
- \* New housing for groups of folks built surrounding a large garden space in the middle, so there is a place where all way be involved together in co-creation.
- \* Creating "Papercrete" from our waste paper, as a home-building material, instead of it going into landfills.
- \* The growing of kenaf as an alternative to trees for paper-making, in eastern Oregon.
- \* To make Portland a self-sustaining city. We can do it here and now. We are a positive example for the whole world.

Breathtaking... and Deadly

# Fireworks and Pollution

by Gar Smith

Last December, environmentalists in Sweden, Germany and Australia issued a Global Call for Action, asking the world community to take a stand against 21st century air pollution by halting the globe-circling fireworks displays planned to celebrate the dawn of the year 2000.

"Wouldn't it be nice to be able to greet the new millennium in a dignified, responsible and environmentally friendly way?" the Sweden-based *Heavy Metal Bulletin* asked. "Is this type of celebration really a good habit to carry into the New Millennium?"

Air-bursting shells – with picturesque names like chrysanthemum, peony, willow, saturn, strobe, and salute – are lovely to watch but, when it comes to skyrockets, every silver lining has a cloud. As the *Bulletin* points out, heavy metal fallout from exploding fireworks poses a threat to "nature, animals and human beings."

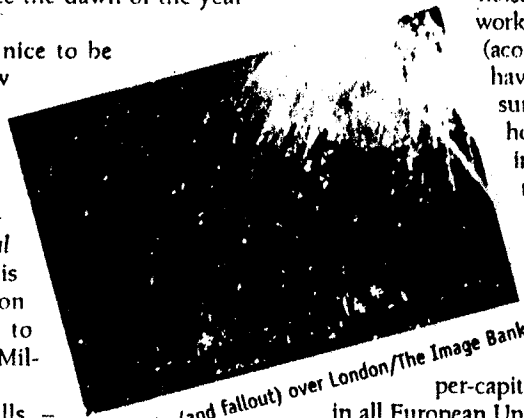
In addition to the charges of black powder (containing carcinogenic sulfur-coal compounds) that send skyrockets airborne and blast them into patterns of glowing sparks, fireworks contain a number of toxic metals that produce a range of dazzling colors. Strontium produces blazing reds, copper compounds burn blue, magnesium, titanium and aluminum create brilliant white sparks.

Sodium chloride produces orange-yellow fire, boric acid burns green, potassium and rubidium compounds produce purples and burning lithium glows red. Glittering greens are produced by radioactive barium.

During the Stockholm Water Festival in 1996, air pollutant levels were measured before and after the fireworks display. Levels of airborne arsenic were found to be twice normal, while levels of mercury, cadmium, lead, copper, zinc and chromium were as high as 500 times above normal.

The October 1999 issue of the Swedish technical magazine *New Teknik* estimated that millennium fireworks shows would dump three tons of lead, 60 tons of chromium and several kilograms of cadmium over Sweden within a matter of hours. Add to

**M**illennium fireworks shows in Europe pumped an estimated 124 tons of lead into the sky. US fireworks shows added another 90 tons of lead



Fireworks (and fallout) over London/The Image Bank

this fact that noise from exploding fireworks can top 130 decibels (acoustic health specialists have shown that exposure to 105 dB for one hour can damage hearing) it's no surprise that the *Bulletin* reports that a surprisingly large percentage of Swedish citizens now favor a total ban.

Assuming the same amount of per-capita fireworks was used in all European Union countries to welcome the year 2000, the *Bulletin* estimates that the millennial celebrations shot 124 tons of lead into the air of the European Union countries. The spectacular show above Australia's Sydney Harbor filled the air with an estimated six tons of lead. In the US, fireworks shows may have generated 90 tons of sky-borne lead pollution – a flagrant (and pungent) violation of the Clean Air Act.

"The increased exposure constitutes a direct risk for people with asthma, metal allergies and chemical sensitivities," The *Bulletin* notes. "Infants and children are particularly vulnerable and may suffer permanent damage. Many pet owners and farmers are concerned, and wildlife remains completely unprotected." Fireworks displays, critics argue, may even violate Agenda 21 of the UN Earth Summit agreement.

"How can we expect people in the so-called third world to be environmentally friendly if we cannot abstain from completely useless pollution?" the *Bulletin* asks.

Skylighter, Inc., the "supermarket of pyrotechnics," stocks more than 108 different chemical additives used in the production of fireworks. Skylighter's inventory includes acetone, ammonium perchlorate, benzoic acid, boric acid, calcium carbonate, xylene, chlorine, alcohol, sodium fluoaluminate, dextrin, sodium benzoate, guanidine nitrate, hexachloroethane, stearic acid, iodine, lactose, lead tetraoxide, sodium bicarbonate, lead monoxide, methylene chloride, shellac, oxalic acid, chlorinated

rubber, polyethylene, tungsten, zinc chromate, sodium salicylate, polyvinyl chloride and sorbitol – along with such prosaic items as pine rosin, tropical tree resin and rice hulls (coated with burst-powder to break shells).

Fireworks shows are big business. New York-based Grucci ("The First Family of Fireworks") made \$2.1 million on Independence Day shows in 1999. Grucci's New Year's spectacular at the Washington Monument required 140 tons of sand, 135 miles of wire, 26 pyrotechnicians and enough lumber to build a single-family house. The number of exploding shells is a family secret. "We address our programs as an art," says Felix Grucci, Jr. "You wouldn't ask Michelangelo how many buckets of paint he used to paint the Sistine Chapel."

The booming economy has caused pyrotechnic profits to skyrocket as corporations – and newly super-rich individuals – increasingly turn to the rockets' red glare to spice up corporate events and private parties. And the bombs bursting in air are getting bigger. A Grucci spokesperson interviewed by the *New York Times* reported that customers who were satisfied with four-inch shells last year are now insisting on six-inch shells that detonate 200 feet in the air.

The exploding use of fireworks poses an increasing – and unexplored – threat to human health. Airborne chemical particulates have been linked to lung cancer, heart attacks and premature deaths. An estimated 50,000 US citizens die each year from exposure to airborne particulates.

The *Bulletin* has called on Sweden's health authorities to provide all vulnerable citizens with protective facemasks, goggles, and earplugs. Shelters could also be provided for anyone who does not wish to be exposed to the noise, glare, and fallout.

Such hard-hat precautions might have been invoked worldwide had a proposed "Millennium Meteor Fireworks Project" gotten the go-ahead. In 1998, the *Journal of Pyrotechnics* suggested blasting obsolete ballistic missiles into the sky to create storms of "artificial meteors" over target cities. Citing videos of "Scud missile re-entries during the Gulf War," the project engineers argued that ballistic bombardment "over a number of the world's cities could provide a suitably large-scale commemoration of humanity's entry into the new millennium."

If we must forego the guilty pleasure of fireworks, how then should we celebrate momentous events? The *Bulletin*'s simple suggestion: "Watch the stars." For house-bound celebrants, PBS' "Noya" hosts a website [[www.pbs.org/wgbh/nowa/kaboom](http://www.pbs.org/wgbh/nowa/kaboom)] that invites visitors to design their own world-class pyrotechnic extravaganzas, complete with virtual explosions, musical accompaniment – and absolutely no air pollution.

# ALTERNATIVE CROPS

## Kenaf

**THE BASICS** Kenaf (pronounced ke NAF) is an annual fiber plant that has been grown for thousands of years in Africa and Asia. U.S. interest in the crop first began during World War II when jute, an Asian crop used to make twine and rope, was unavailable. USDA and private individuals have been researching other potential uses since then.

Kenaf is in the early stages of commercialization in the U.S. About 4,000 acres were planted in 1992. Acreage projections for 15 or 20 years from now range from an optimistic one million acres to a very optimistic five million. Planting is presently concentrated in California, Louisiana, Mississippi, and Texas.

Kenaf, a spring crop, can be grown on flex acres and on land not in the government program. It grows well in the southern U.S. and good stands are possible in poor soils. The plants, which reach a height of 12 to 18 feet, are harvested for their stalks. The outer bark, or bast, is used to make such products as burlap, carpet padding and pulp. The short-fibered core is processed into such products as poultry litter, packing material and oil-absorbent mats.

**ONE GROWER'S EXPERIENCE** Brent Brasher, of Charleston, MS, and other farmers in his area formed a co-op and built their own kenaf processing facility.



Brent Brasher is part of a farmer-formed kenaf co-op.

Courtesy of the University of Mississippi

Brasher started experimenting with kenaf in 1987 while searching for an alternative to soybeans. His interest increased when a newsprint mill was built nearby. He hopes the mill will eventually be a market for kenaf grown in the area.

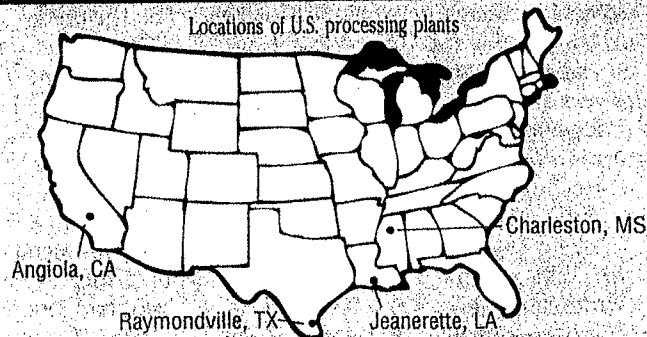
Brasher and co-op members grew 1,800 acres of kenaf in 1991 and 2,800 acres in 1992. No one member grows more than 100 acres, however.

Their processing facility separates the bark and core. The core is then sold to manufacturers to be made into horse bedding or oil-absorbent mats.

Co-op members are in the process of sending samples of the bark to specialty paper manufacturers for possible use in cigarette paper or fine writing paper.

Brasher says the co-op is working through some problems. The processing machines, expected to handle 12 tons an hour, can handle only three. The backlog of unprocessed kenaf now consist of the entire 1992 crop plus 20% of the 1991 crop. Still, Brasher remains optimistic. "We have a lot of potential markets," he says. "I think it's going to work."

### Kenaf's geography remains limited



**MARKET POTENTIAL** Most of the recent excitement about kenaf centers around its potential as a source of pulp for newsprint. The U.S. currently imports more than \$4 billion worth of newsprint per year. According to advocates, kenaf has several advantages over wood as a source of newsprint. It can be processed more cheaply, and the resulting paper is stronger, whiter and capable of sharper photo reproduction. Researchers have also found that adding kenaf pulp during the newspaper recycling process improves the quality of recycled paper.

Kenaf's shortcoming is low volume. Lack of financing has delayed construction of a kenaf pulp and paper mill in Texas, and without a guaranteed supply of pulp, newspaper publishers are unlikely to commit to using it.

Kenaf also has potential as a forage crop when harvested early. The stalk is 10% to 15% protein and the leaves are about 30% protein. It is estimated that kenaf will be grown commercially for forage in the next five years.

**INVESTMENT REQUIRED** Producers who plant cotton or soybeans can plant kenaf. The crop can be harvested with a variety of equipment, including forage and sugarcane harvesters.

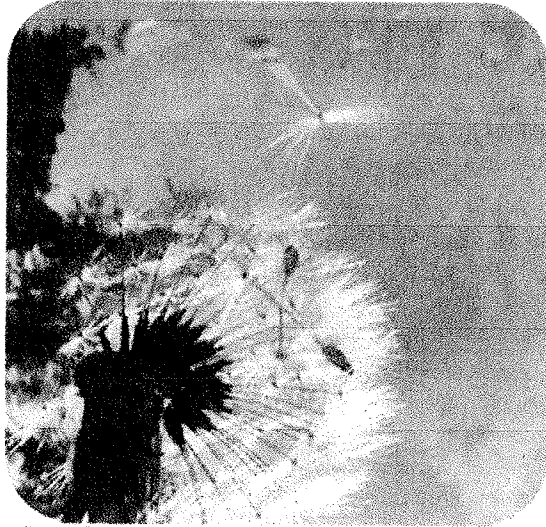
Experts say that kenaf requires little management once a good stand is established. Its canopy of leaves provides a natural weed control. Yields are about 5 tons per acre with farmers receiving about \$50 per ton.

Establishing a new crop poses problems, however. There are few processors, seed is in short supply and expensive. That cost should fall, however, as planted acreage rises.

**FOR MORE INFORMATION** Call USDA's specialty agriculture branch, (202) 219-0866. For a newsletter about kenaf, write Kenaf International, 120 East Jay Avenue, McAllen, TX 78504.

— Lynn Marcinkowski Woolf

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# Papercrete Construction

## Natural Building with Recycled Materials



August 29-31

**We are offering a workshop on an innovative and very promising sustainable building and sculpting material: Papercrete.**

In a simple process, Papercrete (PC) is made on-site from mostly pulped waste paper, some sand or sandy dirt, and very little cement. Cast into forms and hardened through exposure to the sun, this method generates strong, yet light-weight and well-insulating building blocks. Simple to work with, Papercrete can also be sculpted into unusual shapes, artistic detailing, even furniture. Originating in the dry Southwest, we now have some good experience with this material in Eugene's wet winter climate.

This combined seminar and hands-on workshop will introduce various application-specific material combinations (for blocks, mortar, plaster), the Papercrete-making procedure, and how to build a human-scale mixer for yourself. This is a great hands-on experience for people of all skill levels. It is a wonderful way to have fun while learning something which can lead to your having a beautiful new home that you have made with your own hands!

**The material is also an answer to the search for environmentally and socially sustainable home-building materials:**

- ☛ major ingredient is post-consumer paper (much of it still being sent to landfills due to lack of industry demand);
- ☛ extremely low embodied energy: drying and hardening uses solar energy only—a mere 10 percent of PC is cement (potentially substituted by a clay/pumice mix);
- ☛ both paper and sand are sourced locally, minimizing transportation-related energy consumption;
- ☛ unused PC blocks or pieces can be pulped up again and reused on site;
- ☛ PC block or panel production happens at the grass-roots level, only a home-built mixer and rough forms are required (decentralized, local manufacturing);
- ☛ PC demonstrates the necessary shift from energy-intensive to more labor-intensive methods (less environmental deterioration, more jobs).

**As part of the hands-on portion of the workshop, you have a chance to make PC, cast some blocks or panels, do some PC masonry and plastering, install previously-made panels as heat insulation, or work on sculptural projects, e.g., planters or a garden bench. Come learn and play with us!**

## About the Instructor

**Peter Reppe** is currently Sustainable Building Coordinator at LVEC and adjunct instructor at U of Oregon; formerly Sustainability Coordinator at U of Michigan's Facilities Planning Dept., mechanical engineering background, professional experience and Master's Degree related to Life Cycle Assessment and sustainability of buildings.

## Fee and Times

\$250 including all meals and lodging. Without lodging the fee is \$200. The workshop begins Friday evening at 7:00 pm and concludes at 5:00 pm on Sunday.

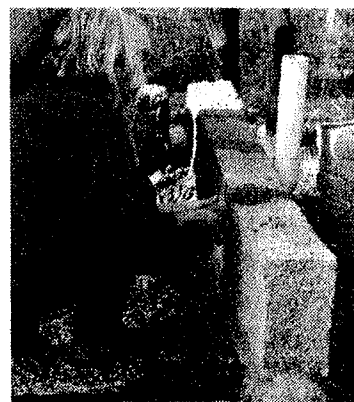
**To Register or for more Info:** (541)937-3351; [info@lostvalley.org](mailto:info@lostvalley.org); [www.lostvalley.org](http://www.lostvalley.org)



*Peter feeds paper into the pulpmaker while Lynn stirs papercrete slurry in the drainbox.*



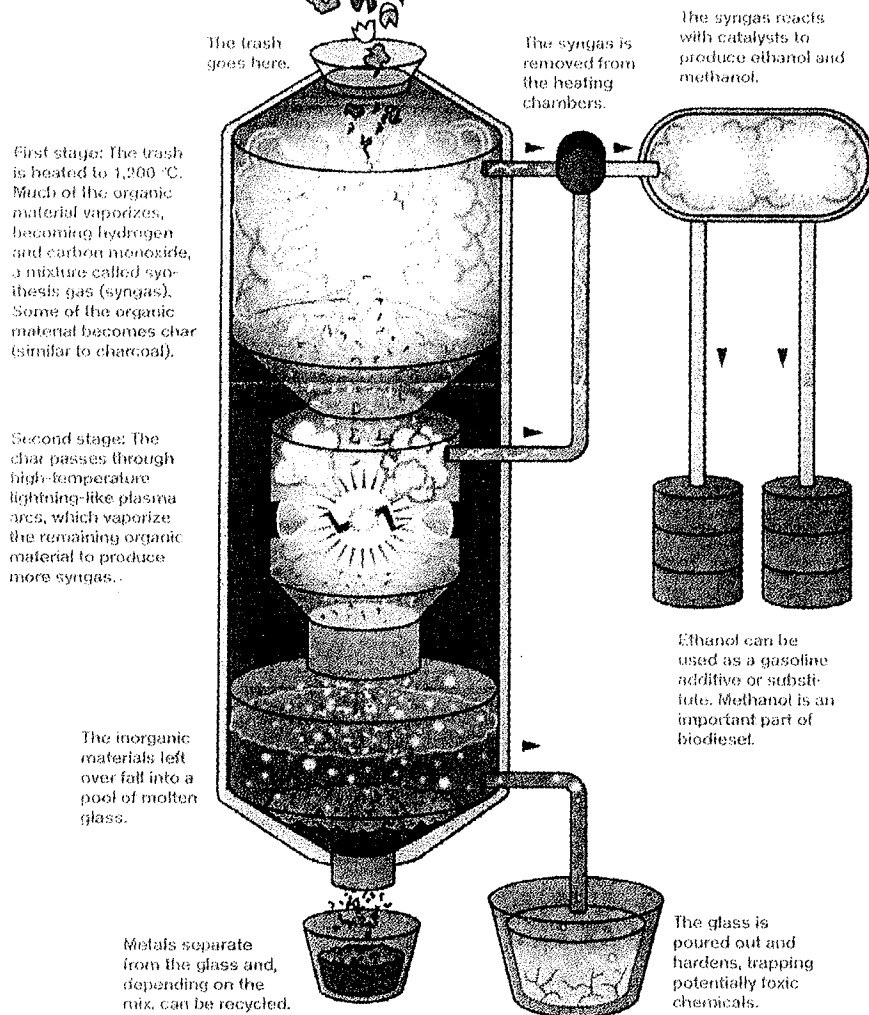
*Placing reinforcing willow branches in the cast of a thin panel.*



*Alice finishing the first course of a papercrete wall.*



*Our pilot building half way up after the last workshop.*



## ENERGY

# Garbage Power

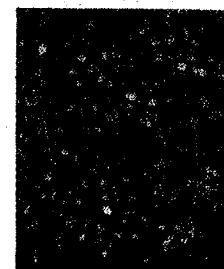
**F**orget corn-derived biofuels. Think garbage. The process shown above uses lightning-like arcs of plasma to transform garbage and other waste into gases from which methanol and ethanol can be made. Unlike conventional incineration, it doesn't generate toxic pollutants, and it yields up to six times as much energy as it consumes. Since its fuel—garbage—would be brought to a landfill or incinerator anyway, the technique would

avoid the extra energy costs associated with growing and processing corn. The technology, based on research at MIT's Plasma Science and Fusion Center and the Pacific Northwest National Lab in Richland, WA, is now being commercialized by Integrated Environmental Technologies (IET), also in Richland. There's enough energy in U.S. municipal and other waste to replace as much as a quarter of the gasoline the country uses, says Daniel Cohn, cofounder of IET and senior research scientist at the MIT center. IET is in talks with a utility and several municipalities to construct the first such plants, says CEO Jeff Surma. **Kevin Bullis**

## BIOTECH

# Fake Skin Kills Bacteria

**O**ne of the problems with artificial skin is its vulnerability to infection. Synthetic skin is used in burn treatment and plastic surgery, but blood vessels, which carry the immune system's machinery, may not connect to the new dermis for a week or two. "Without blood vessels, bacteria can grow and cause infection," says Ioannis Yannas, a bioengineer and materials scientist at MIT who helped develop the first artificial-skin product, approved by the U.S. Food and Drug Administration in the mid-1990s. In a new approach, cultured skin cells are genetically modified to produce higher levels of an antibacterial protein. The cells multiply in the lab and are injected into a collagen matrix of artificial skin. "We're using genetic modification



**Skin cells engineered to produce more antibacterial proteins appear green.**

to try to get the cultured skin to behave more like normal skin," says Dorothy Supp, a researcher at the Cincinnati Shriners Hospital for Children in Ohio, who led the project. Supp cautions that the engineered cells are far from clinical use: the true test of their bacteria-fighting properties will come in the complex environment of a real wound. The researchers are planning experiments in animal models. The technique could eventually be used to make skin that can sweat and tan after implantation.

—Emily Singer



# REGIONAL ROUNDUP

## **Seattle, Washington CITY REACHES HALF-WAY POINT IN DISTRIBUTION OF 45,000 YARD TRIMMINGS/ FOOD RESIDUALS CARTS**

By mid-June, Seattle had distributed 45,000 of the planned 90,000 carts to be used for food scraps, food-soiled paper and yard trimmings, reported the *Seattle Times*. The city is distributing the 96-gallon wheeled containers neighborhood by neighborhood to residential subscribers, and distribution should be completed by the end of August. Carts will be collected every other week year-round, and will be emptied by a hydraulic lift. Primary reason for the new carts is to lessen the lifting danger to recycling and trash collectors. Notes the newspaper: The carts are part of the city's recycling initiative, which has set a 60 percent recovery rate. Today that number is about 40 percent, up from 20 percent in the early 1990s. About 30 percent of residential trash is food and soiled paper. Organic residuals will go to Cedar Grove Composting in nearby Maple Valley. As explained by Hans Van Dusen, solid waste contracts manager for Waste Management, it costs Seattle \$50/ton to dump its garbage at the Columbia Ridge Landfill in Arlington, Oregon. "This is a great resource. It's cheaper to take this as compost than garbage." Anything cheaper than \$50/ton means the city is saving money. Seattle pays Cedar Grove \$23/ton to accept material for use as a compost feedstock, excluding labor.

## **Grove City, Ohio GREEN ENERGY CENTER TO CONVERT LANDFILL GAS INTO METHANE FOR POWER**

Ground has been broken by the Solid Waste Authority of Central Ohio (SWACO) and FirmGreen of Newport Beach, California to construct an \$18-million Green Energy Center. The process will convert landfill gas from the Franklin County site into methane and CO<sub>2</sub>. When operational, the Center will produce 7 million-gallons of methanol annually, reduce greenhouse gases in an amount equal to removal of nearly 2,000 cars, and reduce oil consumption by 20,800 barrels.

First phase of the project will provide electricity to power SWACO's administration and maintenance buildings,

cutting energy costs and making the Authority 95 percent energy self-sufficient. "This is just the beginning of a very promising economic development story," says SWACO executive director Mike Long.

The second phase of the project will involve the cleaning and conversion of landfill gas into Compressed Natural Gas (CNG), which will fuel transfer trucks and other SWACO vehicles. Around \$100,000/year in fleet fuel costs will be saved. The same landfill gas CNG processes could power school and transit buses locally.

The Green Energy Center is designed to be part of a green business park on a 225 acre site across from the landfill. Fueled by landfill gas, the new Pyramid Resource Center promises "green construction standards, a park-like campus and a hub center for R&D."

## **Minneapolis, Minnesota AGRICULTURE DEPARTMENT AWARDS GRANT TO IATP TO EXPAND BIOMASS MARKET**

The USDA's Forest Service awarded the Institute for Agriculture and Trade Policy (IATP) a \$250,000 grant last month to help promote growth of the biomass energy market in northern Minnesota. As part of the grant, IATP will partner with the Superior National Forest, the Laurentian Energy Authority and Forest Management Systems, a cooperative logging business.

With its large amount of woody residuals, Northern Minnesota provides a good ecosystem to support a biomass energy plant. The Virginia and Hibbing Public Utilities, through its partnership known as Laurentian Energy, plan to refit their power generation facilities to use woody materials under contract to Excel Energy.

"Biomass energy is an exciting opportunity to improve forest and land management, generate renewable energy and support the local economy," says Don Arnosti, IATP Forestry Director.

Project partners will conduct 12 test biomass harvests on approximately 180 acres. Three common forest conditions will be test-harvested utilizing several different combinations of equipment. Research data will also help update Minnesota "Best Management Practices" to include sustainable biomass removal parameters that safeguard future site productivity and protect wildlife habitats.

## **New York, New York COLUMBIA UNIVERSITY IS SATISFIED USER OF CORN-FED BIODEGRADABLE PLASTIC**

With almost a year's experience of using biodegradable plastic containers for its salads, fruit and sandwiches at dining locations all over campus, Columbia University staff are very satisfied with the switch. As Larry Levitas, Director of Dining Services, phrases it: "You really can't tell," which may explain why so many students don't realize that the packaging is made from yellow corn instead of petroleum and it comes from distributor Cargill Dow and is made by NatureWorks PLA. Adds Levitas: "We're Columbia, so we should be at the forefront." It's likely that all plastic products such as cutlery and cups will eventually be phased out, he adds. Points out senior Jessica DeCamillo who is community coordinator for the Earth Coalition: "Anything that reduces the waste that this university produces is a great thing."

## **Plover, Wisconsin ASSOCIATION NEWSLETTER HIGHLIGHTS EXAMPLES OF RECYCLING SUCCESS**

The June 2005 issue of *AROW*, compiled by the Associated Recyclers of Wisconsin, lists many examples of high performance such as:

*New Method to Recycle Corrugated Paper Fiber* — By removing polymer tape and plastic contaminants from the paper fiber, Green Bay Packaging has kept 2,000 tons of material a month from being landfilled. "That's a cost savings of about \$18,000/month," says Mike Deprey of the packaging firm.

Along with Newark Recycled Fibers and Onyx Waste Services, Green Bay Packaging received the 2005 Brown County Business Recycling Award for waste minimization. Newark Recycled also determined the fiber could be used as center sheet filler for paperboard made by Wisconsin Paperboard in Milwaukee. Green Bay Packaging installed a screw press to remove water from the paper sludge so that transport by Onyx would make fiscal sense.

*Fort McCoy Surpassed Recycling Goals* — Located near Tomah, Wisconsin, the military base in 2004 recycled more than 570,000 pounds of cardboard, 1.4 million pounds of scrap metals, more than 290,000 pounds of mixed pa-



# Nanosolar: Power to the People

Reprinted with permission from TreeHugger.com

SAN JOSE, California—Nanosolar coatings are as thin as a layer of paint and can transfer sunlight into power quite efficiently. Imagine the possibilities, from solar-coated shingles to solar-lined windows to solar-powered cell phones and ipods. Solar-powered buildings and homes might just become standard in the future thanks to this innovative technology by Nanosolar, Inc. The almighty dollar will launch these thin-film solar cells into worldwide applications thanks to the fact that it's actually cheaper than burning coal. The underlying technology for these solar cells is nothing new, having been around for decades, but Nanosolar has created the actual technology to manufacture and mass produce the solar sheets.

The solar cells are produced by a solar printing press of sorts rolling out these aptly named PowerSheets rapidly and cheaply. The machines apply a layer of solar-absorbing nano-ink onto metal sheets as thin as aluminum foil reducing production costs to a mere tenth of current solar panels and at a rate of several hundred feet per minute. The first commercial cells for consumer use are scheduled to be released this year.

Cost has always been the burdening factor weighing down the mass application of solar technology at nearly \$3 per watt. In order to compete with the energy produced from coal, solar has been in need of finding a way to shrink its costs down to \$1 per watt. Nanosolar's cells use absolutely no silicon as is the standard for current solar production and the efficiency of the PowerSheet cells are competitive with the traditional systems as well. The golden kicker: the cost to produce these solar coatings is a mere 30 cents per watt!!

Nanosolar will be the largest solar plant in the world in San Jose. Once full production begins next year, the facility will produce 430 megawatts per year, more than the combined total of every other solar manufacturer in the U.S.

SCIENCE

# Don't Drink the Water?

## Fluoride from your tap may not do much good – and may cause cancer.

Remember the great fluoride debate? Back in the 1950's, every voice of authority, from the U.S. Public Health Service to the PTA, supported adding fluoride to the water supply as an effective and totally safe way to promote healthy teeth. The only opponents seemed to be John Birchers and other extremists who regarded the scheme as a diabolical communist plot. In the years since, most of the nation's major cities fluoridated their water, and the issue appeared closed. No less an objective voice than Consumer Reports declared in 1978, "The survival of this fake controversy . . . represents one of the major triumphs of quackery over science in our generation."

In fact, the debate never ended. Now it may explode as never before, posing new challenges to medical dogma and giving parents one more thing to worry about.

Government researchers have new evidence that casts doubt on the benefits of fluoridation and suggests that it is not without risk. The most incendiary results come from the National Toxicology Program (NTP), which in 1977 was ordered by Congress to determine whether fluoride causes cancer. This week NTP plans to

release data showing that lab rats given fluoridated water had a higher rate of a rare bone cancer called osteosarcoma. According to a memo by the Environmental Protection Agency, "very preliminary data from recent health studies . . . indicate that fluoride may be a carcinogen."

Fluoridation proponents are already criticizing the NTP study, but it will be

***"Fluoridation is the greatest case of scientific fraud of this century, if not all time."***

— Robert Carton, Ph.D., Toxicologist

***"The survival of this fake controversy represents the major triumph of quackery over science in our time!"***

— Landmark Article in Consumer Reports '78

harder to discredit or ignore than hundreds of earlier experiments, varying in quality from around the world, that have linked fluoride to mottled teeth, skeletal damage, genetic defects and other ills.

During the two-year experiment, rats and mice drank water with different levels of sodium fluoride. None of the animals drinking

fluoride-free water developed cancer, nor did any of those drinking water with the lowest fluoride concentration, 11 parts per million (ppm). But of the 50 male rats consuming 45 ppm water, one developed osteosarcoma. Four of 80 male rats drinking 79 ppm fluoride

## A Few of the Serious Health Disorders Caused By Deadly Fluoridated Water:

— Excerpts from Bragg Water Book

- **Cancer with all its deadly forms**
- **Digestive System Disorders**  
Ulcers & Colitis, Inability to Utilize Vit. B & C, Constipation & Nausea, Cirrhosis & Hepatitis
- **Kidney, Bladder & Urinary Disorders**
- **Respiratory & Lung Disorders**  
Tuberculosis, Asthma, Sinusitis & Bronchitis
- **Circulatory Diseases**  
Arteriosclerosis, Heart Attack, Hypo & Hypertension, Varicose Veins, Coronary Thrombosis
- **Blood Conditions**  
Leukemia, Hemophilia & Anemia

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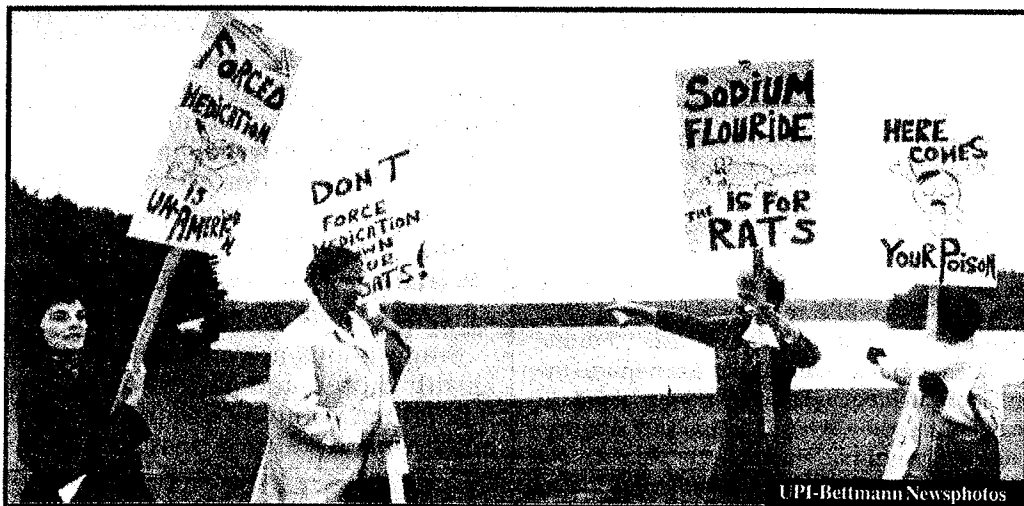
developed osteosarcoma. No mice or female rats showed signs of bone cancer.

Although the animals drank higher concentrations of fluoride than people, (the legal standard is 4 ppm), such megadosing is standard toxicological practice. It's the only way to detect an effect without using an impossibly large number of test animals in lieu of the humans exposed to the substance.

Although the final NTP report will not be released for months, several independent toxicologists find the results significant. Most important, the rats who did not drink fluoride did not get cancer, indicating that the malignancies are "not a fluke," says EPA scientist William Marcus. There is also a convincing relationship between dose and response: the more fluoride, the more cancers. Pathologist David Kaufman of the University of North Carolina warns that the rat data must be examined to see if the cancers appeared in the long bones of the arms and legs, as osteosarcomas do in humans, or in other places, which might make the results less relevant to people. Still, Kaufman says NTP data "make fluoride look like a weak carcinogen. It's obviously something to worry about" – but not panic over. There are about 900 cases of osteosarcoma in the United States annually; even if fluoride caused all of them – an impossibility – the lifetime risk to any individual from drinking fluoridated tap water would still be only about one in 5,000.

Too crude: If fluoride causes bone cancer in lab rats, then why, after 45 years of fluoridation, haven't researchers seen a rash of osteosarcomas in fluoridated cities? Because epidemiology is too crude to detect it even if the cancers are

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**Since 1996 these 11 Associations no longer endorse Water Fluoridation:**

- American Heart Assoc. • American Academy of Allergy & Immunology
- American Cancer Society • Chronic Fatigue Syndrome Action Network
- American Diabetes Assoc. • National Institute of Law Municipal Officers
- American Chiropractic Assoc. • American Civil Liberties Union
- Nat'l Kidney Foundation • American Psychiatric Assoc. • Soc. of Toxicology

P.S. This article is only one of 100's against fluoridation! Facts are strong! **Don't drink fluoridated water!!!** – PB

## More Serious Health Disorders caused by Deadly Fluoridated Water:

– Excerpts from Bragg Water Book

- **Mental & Neurological Disorders**  
Neuroses & Psychoses & Multiple Sclerosis
- **Eye Diseases & Endocrine Dysfunction**  
Cataracts, Glaucoma, Goiter & Impaired Gland  
Functioning of Adrenal, Thyroid & Sex Glands
- **Skin, Nail & Hair Conditions**  
Acne, Boils, Dermatitis, Eczema, Alopecia & Lupus
- **Bone & Joint Conditions** - Osteoporosis,  
Bone Cancer, Arthritis, Swollen & Aching Joints
- **Teeth & Gum Diseases** - Gum & Periodontal,  
Mottled & Darkened Teeth, Bone & Calcium Loss
- **Other Miscellaneous Conditions**  
Premature & Stillbirths, Hearing Loss and  
Headaches and a host of other problems

■ Reader's Digest Universal Dictionary says FLUORINE: "A pale yellow, highly corrosive, highly poisonous, gaseous halogen element, the most electro-negative and most reactive of all the elements." **Fluoride is a highly toxic, long-term health risk. – Why take risks and chances with your health!**

### Newsweek Fluoridation Article continued

there. In the 1970's, the National Cancer Institute found no sign of higher cancer rates in fluoridated cities. But that reassuring finding may be misleading. According to Donald Taves, a fluoride expert, if the difference were anything less than 7 percent it would not be detectable. Another obstacle to definitive epidemiology is mobility: just because a person got osteosarcoma in a fluoridated city does not mean he had been living there all his life.

The NTP results assume an added importance when combined with recent data on the shrinking benefits of fluoridation. According to the American Dental Association (ADA), tooth decay is anywhere from 50 to 70 percent less in fluoridated areas. But figures from the National Institute of Dental Research (NIDR), part of the National Institutes of Health, suggest otherwise. A 1987 survey of almost 40,000 schoolchildren found that tooth decay had declined sharply everywhere. Children who always lived in fluoridated areas had 18 percent less decay, compared with their peers who had lived in nonfluoridated areas. This 18 percent translates into a difference of fewer than one cavity per child. Similarly, in a 1986 paper in the British journal Nature, Australian researcher Mark Diesendorf assessed 24 studies from eight countries and found that cavity rates had declined equally in fluoridated and nonfluoridated areas, suggesting fluoridated water isn't that important! As a result of all these past and current studies, argues Alan Gray, a leading pro-fluoridation dentist in Canada, "it is now becoming difficult to provide accurate, and ethical advice" to people about fluoridation.

## Shocking Fluoride Facts:

■ 67% of the U.S. population drinks fluoride water, which costs taxpayers billions, not only for fluoride, but in mounting illness & huge medical expenses!

■ 41 of the 50 largest US cities have added deadly fluoride to their drinking water. California's Governor passed a fluoride bill for all California, which could bankrupt cities and also their medical facilities! Many Citizen Action Groups and some wise city fathers have refused fluoridation like those in Santa Barbara, Santa Cruz, San Diego, Modesto, Redding & Watsonville.

■ Millions of gallons of this deadly poison are doing untold damage. There is a compelling cover story back in July 2000 Journal of the American Dental Association that finally clarifies for every dentist in America that fluoride does not reduce tooth decay from drink and ingestion – they claim it only helps with application to the surface of the tooth. If your area is fluoridated, start now to form action groups to stop this criminal action – to protect and save the lives of yourself, your family and all future generations!

Fluoridation is unique among environmental controversies, in that one side has consistently denied that questions of risk or benefit even exist. The ADA states, "Anti-fluoridation groups attempt to create the illusion of a scientific controversy (which is ) merely a ploy to create doubt about a well-researched, well-demonstrated preventive measure." But even well-researched articles raise hackles. When, in 1988, Chemical & Engineering News presented a balanced report on fluoridation, it attracted the wrath of the medical establishment. Says Taves, "Too many scientists lost their objectivity. This has become a religion on both sides."

The NIDR kept files on people perceived as threats to fluoridation. Political decisions were at odds with expert advice: a panel convened by the Surgeon General even in 1983 expressed concern, in closed sessions, about skeletal and dental damage from fluoride. At one point, a member said, "You would have to have rocks in your head, in my opinion, to allow your child much more than 2 ppm (fluoride)." Said another, "I think we all agree on that." Even so, in 1986 EPA raised the fluoride standard from 2 to 4ppm, except in Calif. where it remains 2ppm.

This month EPA opened a review of the standard. Once EPA receives the official NTP report, it will establish a target "safe" fluoride level. The Safe Drinking Water Act requires the level for carcinogens be zero, but the standard may be based on what is technically feasible. Fluoridation can be stopped immediately, but many communities with naturally fluoridated

water would have to take out the fluoride if it exceeded the limit of 4 ppm. As the EPA wrestles with standards, John

Sullivan of the American Water Works Association fears, "confusion will reign" since some laws will still require fluoridation, a practice many claim causes cancer!

As they await EPA's decision, pro fluoridationists are invoking arguments of social justice. Dental researcher Ernest Newbrun of the University of California, San Francisco contends that fluoridation promotes the health of children of "all races and all socioeconomic classes," not only those with enough money or discipline or access to the health system to take a fluoride supplement every day. He and others say it is morally wrong not to provide the benefits of fluoride. The NIDR's and other's surveys suggest that fluoride in toothpaste and dental rinses also ensures healthy teeth for those who use the fluoride products, they imply that those who don't use them might suffer.

No one can foresee how the fluoride debate will play out this time. But since the 1950's, the country's environmental consciousness has been heightened. In the end, deciding whether or not to fluoridate turns less on science than on values. The sheer weight of good research may finally, after four decades, begin to wisely inform those judgements and even overwhelm the unscientific rhetoric that has characterized both sides of the debate for far too long.

– SHARON BEGLEY

The kind of  
water you drink  
can make or  
break your health!

## This Book Can Save Your Life!

Dear Friend,

This featured Newsweek story shows the importance of pure distilled water! I shared a radio talk show for an hour with Sharon Begley, Newsweek's former Medical Editor & Author of this revealing article. I suggest you read this water book –

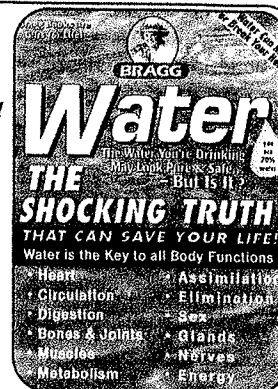
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### FLASH – LATEST INFO! Visit Web For Fluoridation News:

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- [www.fluoridealert.org](http://www.fluoridealert.org) • [www.rvi.net/~fluoride](http://www.rvi.net/~fluoride)
- [www.fluorideresearch.org](http://www.fluorideresearch.org) • [www.fluoridation.com](http://www.fluoridation.com)
- [www.bruha.com/fluoride](http://www.bruha.com/fluoride) • [www.gjnc.com/cfsdwh](http://www.gjnc.com/cfsdwh)

# Port of Portland.



## Respecting the place we call home.

Our mission to provide worldwide transportation access is only complete if we also enhance quality of life in the region we serve. That means doing our job in the most environmentally responsible way, each and every day. At our four marine terminals, four airports, and four industrial parks, we take seriously the challenge to be good stewards of the land, sky, and water that make our work possible.

### Our Environmental Goals

- **Accountability.** Set and report on objectives that help reduce our environmental impacts.
- **Responsibility.** Study and clean up historic contaminated sediments in the Willamette River.
- **Sustainability.** Incorporate green building techniques into new Port development, and promote sustainable development on Port-owned lands.
- **Community.** Continue to work with environmental stakeholders on key projects.
- **Leadership.** Integrate environmental considerations into our planning, decision-making, and actions.

### Our Environmental Programs

#### Water Quality

- **Protecting Streams and Rivers.** At Marine Terminal 6, stormwater is managed through porous pavement and bioswales, and 100% of stormwater is now managed onsite. We've replaced treated timber chocks with recycled plastic chocks at T6. We've installed decals at catch basins throughout Port properties that remind employees and tenants about the connection between stormwater and river health.
- **Managing Deicing Materials.** An enhanced aircraft deicing system is being designed at PDX to treat deicing runoff onsite.
- **Conserving Water.** Irrigation systems use real-time meteorological data to determine watering needs. Low-flow and automatic shut-off washroom units have been installed at various Port facilities. Short flush toilets at PDX reduce water consumption, using only 1 to 3 gallons per flush, compared to the typical 4 to 6 gallons.
- **Reducing Potable Water Use.** Where possible, we've replaced potable water with nonpotable water for irrigation, plumbing, and industrial use.

#### Natural Resources

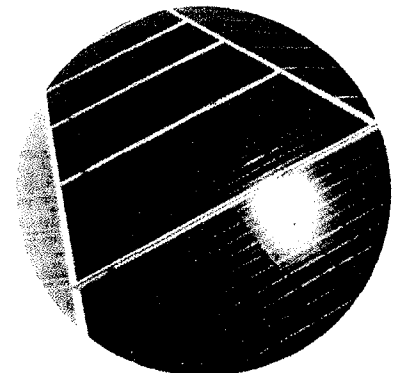
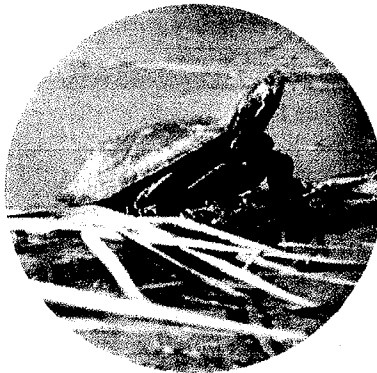
- **Protecting Threatened and Native Species.** Port lands are managed with an emphasis on protecting native species, like western painted turtles and streaked horned larks. Our Wildlife Hazard Management Program focuses on reducing damage to aircraft and wildlife fatalities through non-lethal management of native wildlife.
- **Controlling Invasive Species.** We have an aggressive approach to controlling invasive species both on land and in water.
- **Promoting Habitat Connectivity.** Our Mitigation Management Program encompasses over 730 acres of high-quality wildlife habitat, including the award-winning Vanport Wetlands.

## Energy and Air Quality

- **Understanding Our Impact.** We maintain extensive emissions inventories for our marine and aviation facilities, and use the data to determine where we can reduce emissions.
- **Promoting Alternative Fuels.** Alternative fuel and hybrid vehicles complement the Port's fleet. PDX's entire fleet of shuttle buses runs on compressed natural gas. The Port has been a long-time advocate of cleaner-burning diesel, which reduces particulate matter and greenhouse gases. Ultra-low sulfur diesel and B20 blend of biodiesel are used in construction and container handling equipment.
- **Minimizing Idle Time.** An upgraded computer system at T6's truck gate helps to minimize truck idling. PDX's Quick Pay parking system has dramatically minimized vehicle idling time. Many of our partner airlines have installed electric auxiliary power units at PDX gates so that parked aircraft don't have to run their engines.
- **Reducing Energy-Related Emissions.** We purchase renewable energy—in 2008, 20% of our electricity needs will be met by renewable power. Our eventual goal is 100%. Throughout our aviation and marine facilities, we have installed efficient light fixtures with automatic shut-offs, and we maximize daylighting in new development.
- **Encouraging Alternative Transportation.** Max light rail and bike lanes and trails provide low-carbon options to airport employees and travelers.

## Waste Management and Recycling

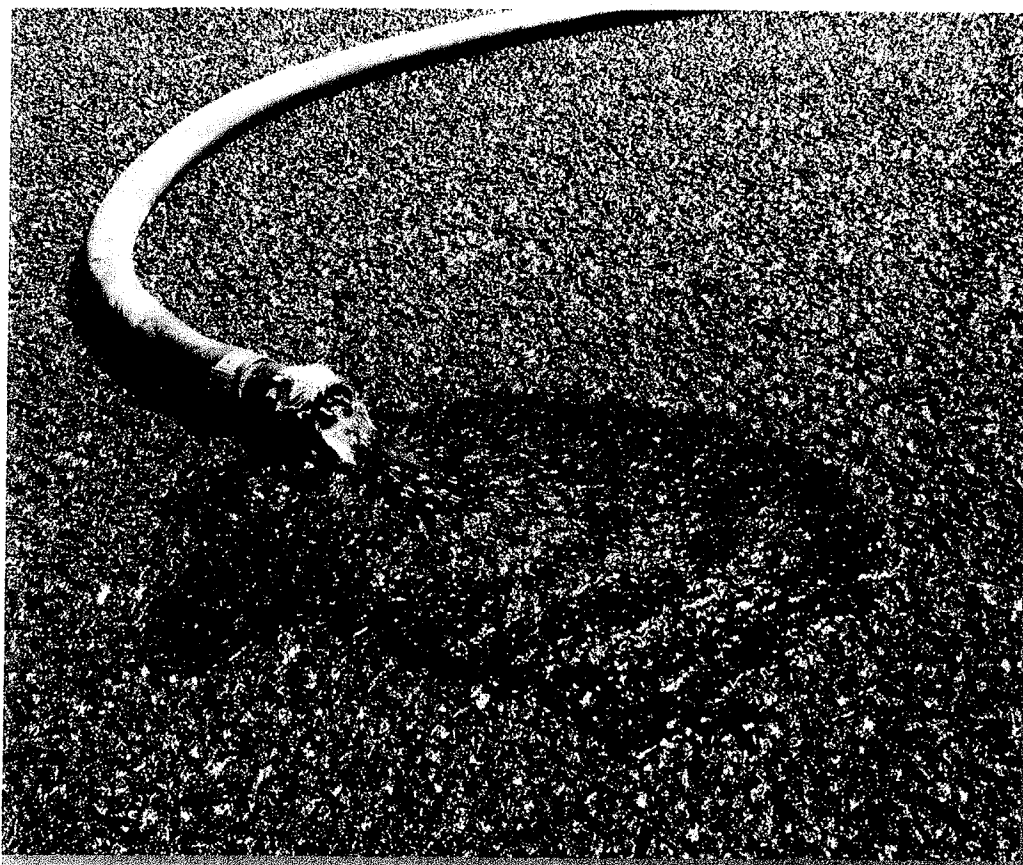
- **Reducing, Recycling, Reusing.** We partner with 21 PDX concessionaires on a food waste diversion program. Over 1,100 tons of food waste have become reusable compost. We've reduced Port-wide solid waste, and 90% of all construction waste is recycled. Grease from PDX restaurants is turned into biofuel, and a new program helps airline partners collect and recycle cans and bottles from deplaned aircraft.
- **Demonstrating Our Responsibility.** Marine and aviation facilities have received "Conditionally Exempt Generator" status by the Oregon Department of Environmental Quality by demonstrating responsible materials procurement, handling, and waste management practices.
- **Recognizing Leadership.** We recognize and award tenants for environmental innovation.



# Pulling Together the Pieces of the Stormwater Puzzle

*Porous pavement and other techniques in Portland*

By W. Matthew Rogers and Mike Faha



**W**ith an average of 37 inches per year of precipitation, Portland, OR, earns its reputation as a rainy city. Locals enjoy the city's lush green environment as a reasonable tradeoff for its many rainy days. Over the last few years, Portland also has developed a reputation for another kind of "green" as the city has become one of the national centers of

Porous pavement, or "thirsty asphalt," demonstrates infiltration capability.

creative, innovative approaches to green development practices, including green buildings, green streets, and green parking lots.

Like other major cities in the United States, Portland's development over the last four decades reflects the dominance of automobiles and trucks in industry, the region's economy, and personal lifestyles.

Development in the automobile age has resulted in vast areas of impervious surface for roadways, parking lots, and driveways. Engineers designed very efficient stormwater collection and conveyance systems that quickly removed stormwater from the developed area. Stormwater runoff from the constructed impervious surface was collected and routed into nearby rivers, streams, and other natural drainages. Waterways became regularly inundated with surges of stormwater, which negatively has affected both water quality (pollution runoff) and water quantity (rate of runoff).

The result of this development approach has devastated the natural environment with flooding, pollution, degradation of riparian zones and habitat, lowering of groundwater tables, and many other problems. Agencies, municipalities, and design and construction professionals have been working to correct the situation by adding retrofits to old systems and designing new development that meets higher standards.

Development in Portland is entering a new generation of stormwater management practices by using tools like porous pavement, seepage trenches, bioswales, infiltration planters, and other innovative techniques not only to treat and retain or detain stormwater but also to attempt to more closely mimic the predevelopment hydrologic cycle for a site. Engineers and landscape architects currently are working with both public agencies and private developers in Portland to assess sites and develop realistic strategies to manage



the stormwater runoff in a manner that improves water quality through treatment, infiltrates a portion of the runoff consistent with the infiltration capacity of the onsite soils, and slows the flow to reduce storm surge.

Stormwater problems are complex puzzles, as every parcel of land in each watershed is connected to the next watershed by the nearest stream or river—which transmits and perpetuates the impact of every occurrence downstream. Conversely, each new development project represents an opportunity to make one piece of the puzzle a contributor to the whole solution.

### **The Port of Portland Adds a Piece to the Puzzle**

While a large, industrial auto storage yard might not immediately come to mind as the best candidate for environmentally friendly, green design solutions, the Port of Portland's Terminal 6 Expansion proves that rethinking old materials and approaches can move us forward in solving the stormwater puzzle.

In 2005, the Port of Portland embarked upon a plan to improve the Terminal 6 (T6) auto storage facility, which it leases to the Auto Warehousing Corporation (AWC) for offloading and processing of import cars arriving from overseas ports. Imported cars are offloaded from ships, and the yard serves as the first point of rest for the cars, where they can sit from a few days to a few weeks. The loading on the pavement is light auto traffic except in the areas where the cars are loaded onto large auto hauler trucks in an area called the "truckaway." The truckaway area required a thickened pavement section to accommodate the heavier loading.

Due to increases in volume, the T6 facility was in need of expansion to resurface approximately 50 acres for auto storage. The T6 project, an industrial use located adjacent to the Columbia River, presented an excellent opportunity to address a major source of urban watershed problems, impervious pavement.

The port hired Century West Engineering, a leading Northwest consulting firm in municipal infrastructure and sustainable design, for improvements to the auto storage area including new pave-

ment, fencing, landscaping, and lighting. As the project developed, Century West partnered with GreenWorks, a Portland-based landscape architecture firm with a sustainable design focus, and Cahill Associates, a nationally recognized stormwater management expert, to design the project.

The design team considered all options to manage the large volume of stormwater that would be generated from surfacing the site. In addition to meeting the functional requirements of the AWC, the team explored the potential to reduce effective impervious area impacts and mitigate runoff impacts where permeable paving was not practical.

The preferred alternative that was constructed in the summer of 2006 resulted in 35.7 acres of porous pavement and 15.4 acres of impervious pavement for a total new developed area of 51.1 acres. The combination of a porous pavement system coupled with vegetated swales provides for infiltration of 100% of the stormwater onsite.

### **Design Issues: Considering the Alternatives**

The port had experience with large developments along the river and already had implemented many designs that utilized vegetated swales to improve water quality and, in some cases, to infiltrate the stormwater generated by new development. Unfortunately, the methods used at other facilities did not meet the design criteria or available land for this project.

Several factors influenced the design and ultimately led to the use of porous pavement with vegetated swales. The primary concern was the tenant's desire to have the facility constructed within the next construction season. This meant that the somewhat arduous and time-consuming process of permitting a new stormwater outfall to the adjacent Columbia River was not an option.

Available options were to treat the stormwater and connect to the City of Portland storm system that ran adjacent to the site and/or to infiltrate the stormwater onsite. The site is divided into two areas, one roughly 43 acres and the other roughly 8 acres. Preliminary calculations indicated that stormwater from approximately 10 acres of the 43-acre portion of the site and about half of the 8-acre

portion could be infiltrated through vegetated swales if the site was surfaced with standard pavement. The swales would be located outside the paved leased area, utilizing all available space given the topography and zoning restrictions on the site. Stormwater not treated via swales would have to be routed through an alternative stormwater-quality treatment system prior to disposal, such as an underground vault system or ponds.

The porous pavement option allowed stormwater to infiltrate through the pavement section, eliminating the need for an outfall or a stormwater-quality treatment system and offsite disposal. Due to the need to pave the truckaway area with a thicker structural section, runoff from this area was collected and routed to vegetated swales that were included to treat and infiltrate the stormwater.

### **Site Screening for Porous Pavement Compatibility**

Terminal 6 at the Port of Portland is adjacent to the Columbia River just east and upstream of the confluence of the Columbia and Willamette rivers. The site has been filled over time with approximately 6 to 8 feet of sandy fine-grained dredge material over the natural surface in the old Columbia River floodplain. Test pits excavated during the field investigation revealed fairly uniform conditions across the majority of the site with some occasional variations in the composition of the fill material. During construction, this assessment proved to be mostly correct; however, one silty-clay area was encountered that required the material to be over-excavated and replaced with sandy material from a nearby borrow source.

The surface of the redevelopment area was previously covered with 2- to 3-inch-minus crushed aggregate with fines. Due to the size of the material and the difficulty keeping the larger aggregate in place, the tenant uses a 12-ton roller on a weekly basis to compact the material between waves of new autos being offloaded. The result was the compaction of the top 12 to 15 inches of subgrade material.

The permeability of the subsurface soils below the compacted surface was measured to establish an infiltration rate for design. The subsurface soils were generally very well draining with a few local



AUDITOR 03/13/13 AM10483

6 March 2013

To whom it may concern,

This <sup>is a</sup> request to speak before  
city council in support of our  
"homeless" brothers & sisters,  
and to share 38 suggestions  
to help our city and state to  
be more self-sustainable.  
Thank you for this opportunity.

Sincerely,

Carol Van Dyke

314 SE 13th Ave.

Portland, OR

97214-1403

503-233-4815

(This will be Wednesday  
March 27 at 9:30 am)

Thank you \*



Gaea Frost

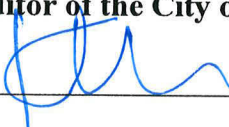
Request of Carol Van Dyke to address Council regarding support of our homeless brothers and sisters and suggestion to help (Communication)

MAR 27 2013

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**LaVonne Griffin-Valade**  
Auditor of the City of Portland

By  \_\_\_\_\_

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2. Fish		
3. Saltzman		
4. Novick		
Hales		