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This newsletter is published by the Organic Trade Association, the North American trade association committed to the promotion of organic products in the marketplace, and the protection of the integrity of organic standards. Its membership includes more than 1,700 producers, processors, distributors and retailers of organic foods, fibers, farm and garden supplies, and health and beauty products. OTA is your leading resource for information about this industry.

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2008 headlines raise questions about non-organic ag

As interest in organic agriculture and products continued to grow during 2008, there were also news stories that raised additional concerns over industrial agricultural practices and their effects on humans and the environment.

Meanwhile, research is showing that organic agriculture is part of the solution to such concerns.

The following highlights some of the news about practices not allowed in organic production.

Trend: Practices not allowed in organic production are linked to health concerns.

➤ **Antibiotic resistance:**

Industrial poultry workers are 32 times more likely to carry *E. coli* bacteria resistant to the antibiotic gentamicin than others outside the poultry industry, according to a study by researchers at Johns Hopkins Bloomberg School of Public Health. The results, published in the December 2007 edition of *Environmental Health Perspectives*, are consistent with findings in Europe showing conventional poultry farmers and workers are at risk of exposure to drug-resistant *E. coli* bacteria. Researchers noted that as food animal production has shifted from the independent farmer to large-scale industrialized operations, the use of antimicrobials in feeds intended to stimulate growth has increased. Currently 16 antimicrobial drugs are approved for use in U.S.

conventional poultry production, with gentamicin the most widely used. Such antibiotics are not allowed in organic agriculture.

➤ **More on antibiotic resistance:**

Researchers from the University of Illinois have reported findings showing tetracycline resistance genes in hog waste lagoons have migrated to groundwater wells at two Illinois swine facilities. Study results were published in the August 2007 issue of *Applied and Environmental Microbiology*.

➤ **Antimicrobials concerns:** In a report released in April 2008, the European Food Safety Authority (EFSA) expressed concerns about the growing use of antimicrobial agents in food. Citing the potentially negative impact of these agents on human resistance to bacteria and other microbes, EFSA spokesperson Alun Jones told *FoodProductionDaily.com* that “Antimicrobial resistance cannot be predicted—it comes from the mutation of existing bacteria...so we need to keep an eye on this issue and make sure that all the potential entry points into the food chain for such resistant bacteria are controlled.”

➤ **Dietary exposure to pesticides:** Building on two earlier experiments, a study by researchers at Emory University and the National Center for Health at the Centers for Disease Control and Prevention, published in the Jan. 15 online version of *Environmental Health Perspectives*, showed that

substituting organic produce for their conventional counterparts reduced metabolite residues of pesticides in children’s urine. In the study, authored by Chensheng Lu, Dana B. Barr, Melanie A. Pearson and Lance A. Waller, 23 children ages 3-11 who only consumed conventional diets were recruited for a one-year study conducted in 2003-2004. When the children were given organic produce for five consecutive days in the summer and fall sampling seasons, median urinary metabolite concentrations fell to non-detected levels for malathion and chlorpyrifos. Researchers also observed overall organophosphorus (OP) pesticide urinary metabolite concentrations rose in the winter months when more fresh imported conventional produce was consumed. Researchers concluded that dietary intake of OP pesticides represents the major source of exposure in young children.

➤ **Neurodevelopment disorders:** A scientific consensus statement on environmental agents associated with neurodevelopmental disorders developed by the Collaborative on Health and the Environment’s Learning and Development Disabilities Initiative has concluded that scientific evidence indicates environmental contaminants are an important cause of learning and development disabilities (LDDs). “Existing animal and

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human data suggest that a greater proportion is environmentally influenced than has yet been generally realized or that can be demonstrated with scientific certainty.” As a result, those signing the consensus statement wrote, “Given the serious consequences of LDDs, a precautionary approach is warranted to protect the most vulnerable of our society.”

- **Pesticide residues in farmworkers’ children:** A study of 60 Latin American children ages 1-6 living in eastern North Carolina farmworker households during the 2004 agricultural production season found the children, on average, had four pesticide metabolites in their urine. Metabolites of organophosphate parathion were found in 90 percent of the children, with chlorpyrifos found in 83.3 percent. Study findings, “Pesticide Urinary Metabolite Levels of Children in Eastern North Carolina Farmworker Households,” appear in the July 2007 issue of *Environmental Health Perspectives*.
- **Breast cancer and early DDT exposure:** Research findings by researchers at the University of California at Berkeley suggest that women who were heavily exposed to DDT during childhood are five times as likely to develop breast cancer. Testing the theory that a person’s age during exposure is critical, researchers led by Barbara A. Cohn, director of UC Berkeley’s Child Health and Development Studies, measured DDT in blood collected between 1959 and 1967 from 129 women who had just given birth at Kaiser Permanente hospitals in the Oakland area. The women in the top third of DDT concentrations who were exposed before the age of 14 were five times as likely to get breast cancer as those with the lowest levels, according to study findings published in the October edition of *Environmental Health Perspectives*. U.S. DDT usage began in 1945, peaked in 1959, and was banned in 1972.
- **Pesticide exposure and Parkinson’s:** Recent findings published in the *BMC Neurology Journal* found that of 600 people studied, those exposed to pesticides had a 1.6 times greater risk of developing Parkinson’s disease than those who were not. Those who made “heavy use” of pesticides, or who were exposed to them more than 200 days in the course of their lifetime, were found to have over twice the level of risk, suggesting that “there is very strong evidence” linking pesticide use and Parkinson’s disease, according to lead researcher Dana Hancock.
- **Pesticide exposure during pregnancy:** A study published in the April 2008 issue of *Environmental Health Perspectives* found that the sons of women exposed at work to pesticides during pregnancy suffered impaired reproductive development. Specifically, the sons were found to have reduced penile length, testicular volume, and abnormal concentrations of various reproductive hormones. The study also found that female workers who were exposed to pesticides on the job were three times more likely to give birth to sons with cryptorchidism, a condition in which one or both testes are absent from the scrotum, than non-exposed female workers.
- **Children at risk in agricultural areas:** According to findings published in the April 2008 issue of *Environmental Health*

Perspectives, children living in regions of intense agricultural activity in the United States face a higher risk of many types of childhood cancer. The risk was found to be highest among children living in counties having 60 percent or more of their total acreage dedicated to farming. The study also revealed that the incidence of certain types of cancer varied by crop type, suggesting a link between cancer type and the use of crop-specific pesticides.

Trend: Industrial agricultural practices are linked to negative environmental outcomes.

- **Pesticides in ground water:** Studying the occurrence and persistence of pesticides in ground water systems, scientists at the U.S. Geological Survey found the presence of pesticides and their degradation products in all four agricultural sites studied in Maryland, Nebraska, California, and Washington. Results, published in the May-June 2008 issue of the *Journal of Environmental Quality*, showed that two classes of herbicides—triazines and chloroacetanilides—were detected most frequently in shallow ground-water samples collected from a network of 59 wells.
- **Nitrogen fertilizers deplete soil:** University of Illinois soil scientists have evidence disputing the view that adding nitrogen fertilizer benefits the soil by building organic carbon. In their paper “The Myth of Nitrogen Fertilization for Soil Carbon Sequestration” published in the November/December 2007 issue of the *Journal of Environmental Quality*, soil scientists Saeed Khan, Richard Mulvaney, Tim Ellsworth and Charlie Boast reported on findings from the University of Illinois Morrow Plots in Urbana, IL, that show how management practices affect soil properties. Discovering that yields were lower for plots receiving the most nitrogen, they found a net depletion in soil organic carbon. Regardless of crop rotation, the decline became greater with the higher nitrogen application rate.
- **Farm runoff and deformed frogs:** Researchers led by Pieter Johnson at the University of Colorado at Boulder have published findings showing that the number of deformed frogs in recent years is caused in part by runoff from farming and ranching. Research findings published in the Sept. 24, 2007, online version of the *Proceedings of the National Academy of Sciences* (www.pnas.org) showed that nitrogen and phosphorous found in fertilizers in runoff from farm land helps fuel a cycle leading to a parasitic infection in tadpoles that causes loss of legs, extra legs, and other deformities.
- **Atrazine and deformed tadpoles:** According to research performed by Tufts University biologists, tadpoles experienced negative physiological changes, including deformed hearts and malfunctioning kidneys and digestive systems, in early phases of their lives when they were exposed to atrazine, an herbicide used to treat crops, golf courses and residential lawns. While causation had not yet been conclusively determined, researchers found that compared with control populations, tadpoles exposed to atrazine had a dramatically higher incidence of abnormalities.
- **Pesticides in drinking water:** A study published in the August 2007 issue of *Environmental Health Perspectives* detected two insecticides and 27 herbicides in 15 reservoirs sampled in the Northern Great Plains in Alberta, Saskatchewan and Manitoba provinces of Canada. The source of the drinking water in the reservoirs was primarily from snowmelt runoff from croplands and from rainfall runoff.

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- **Dead zones and fertilizer run-off:** Research performed at Oak Ridge National Laboratory's Environmental Sciences Division has shown that hypoxia, a fatal condition that affects thousands of fish, shrimp, and shellfish in the Gulf of Mexico each year, is partly the result of fertilizer run-off from agricultural activities in the Mississippi basin. The run-off, along with the temperature differentials created when the warm water from the Mississippi and Atchafalaya Rivers comes into contact with the cold Gulf waters, forms a deadly combination whereby algae grows, dies, decomposes and uses up the oxygen the organisms need for survival.
- **Record-setting dead zones:** Due to extensive flooding in the Mississippi River basin earlier in the year, the "dead zone" in the Gulf of México was expected to cover between 21,500 and 22,500 square kilometers (8,400 to 8,800 square miles) along the bottom waters along the Louisiana-Texas coast this year, according to forecasts by Donald Scavia, a University of Michigan researcher. In addition, the summer dead zone for the Chesapeake Bay area was predicted to be at least 2.4 cubic miles, and perhaps as much as 3 cubic miles, which would be the highest on record. "The growth of these dead zones is an ecological time bomb," said Scavia.
- **Spreading dead zones:** The formation of dead zones has been aggravated by increased river runoff of fertilizers and burning of fossil fuels, according to a review article published in the Aug. 15, 2008, issue of *Science*. Authors Robert J. Diaz of the Virginia Institute of Marine Science and Rutger Rosenberg of the University of Gothenburg in Sweden pointed out that dead zones have been reported from more than 400 systems, affecting more than 245,000 square kilometers.
- **Pesticide risks to bees:** The Natural Resources Defense Council (NRDC) has filed a lawsuit in federal court in Washington, D.C., seeking the U.S. Environmental Protection Agency (EPA) to disclose information it has about pesticides and toxicity to bees. Specifically, NRDC wants EPA's information on the pesticide clothianidin, recently banned in Germany due to concerns about its negative impact on bees. In 2003, EPA granted a registration to this pesticide manufactured by Bayer CropScience under the condition that Bayer submit studies about its product's impact on bees. EPA has refused to disclose results of such studies or say whether findings had ever been submitted. Meanwhile, the Germany organization Coalition Against Bayer Dangers has brought legal action against the chairman of the Bayer AG Board of Manager accusing Bayer Crop Science of "marketing dangerous pesticides and thereby accepting the mass death of bees all over the world."
- **Endosulfan under fire:** A coalition of farm worker, public health and environmental groups on July 24 filed a lawsuit against EPA calling for an end to the use of the hazardous pesticide endosulfan, an organochlorine that has been shown to persist in the environment and poses health problems for humans and wildlife. According to EPA, approximately 1.38 million pounds were used annually in the United States as of 2002, the most recent year for which national usage data are available. Crops commonly treated with endosulfan include cotton, tomatoes, melons, squash, and tobacco.

- **No carbofuran residues allowed:** EPA on July 24 announced it would no longer allow residue of carbofuran on domestically produced or imported food. EPA made the decision on the grounds it poses an unacceptable safety risk to young children. Studies also show the neurotoxin kills wildlife, including birds and bees. EPA's decision was open to a 60-day comment period. The pesticide is mostly on such crops as rice, bananas, coffee and sugar cane.
- **Land degradation:** The Food and Agriculture Organization (FAO) in July announced that land degradation is intensifying in many parts of the world based on data taken over a 20-year period. Study results showed more than 20 percent of all cultivated areas, 30 percent of forests and 10 percent of grasslands are undergoing a decline in ecosystem function and productivity despite ratification of the United Nations Conference to Combat Desertification by 193 countries in 1994. The study cited poor land management as driving the degradation. The good news: quality is improving for cropland managed sustainably (19 percent of cropland), for 10 percent of forests, and 19 percent of grassland.

Trend: More evidence emerges about the negative impact of genetically engineered (GE) crops.

- **Coexistence not possible:** A new report shows the cultivation of GE corn has caused a drastic reduction in organic corn cultivation and is making their coexistence practically impossible in Spain. Findings from the study, conducted by Rosa Binimelis of the Universitat Autònoma de Barcelona Institute of Environmental Science and Technology, appear in the April 2008 *Journal of Agricultural and Environmental Ethics*.
- **Persistence in soil:** Research conducted at Lund University in Sweden found that GE crops can remain in the soil for ten years, in spite of efforts to eradicate them. Researchers found that "volunteer plants" (plants spawned from GE oilseed rape crops) persisted ten years after the original trials took place.
- **Glyphosate resistance emerges:** Glyphosate-resistant johnsongrass has been found in both Arkansas and Mississippi. As such, it is the first glyphosate-resistant warm-season grass found in the United States, and is believed to have developed with the increased use of Roundup Ready crops in these areas.
- **More pesticide use:** In the report, "Who Benefits from GM Crops?: The Rise in Pesticides Use," Friends of the Earth and the Center for Food Safety cite data showing GE crops have led to a large increase in pesticide use and have failed to increase yield or tackle world hunger and poverty. According to the report, four of every five acres of GE crops worldwide are Monsanto's Roundup Ready varieties, designed for use with the herbicide glyphosate. U.S. government data reveal a 15-fold increase in the use of glyphosate on soybeans, corn and cotton acreage in the United States from 1994 to 2005. Meanwhile, rising glyphosate use has resulted in more weeds resistant to the chemical in the United States, Argentina and Brazil. In addition, according to University of Nebraska researchers, Roundup Ready soybeans have a six percent lower yield than conventional soybeans..
- **Bt resistance noted:** Bt-resistant bollworms have been found in more than a dozen cotton fields in Mississippi and Arkansas seven years after the commercial introduction of Bt-cotton, according to research published by B. Tabashnik and colleagues in the February 2008 issue of *Nature Biotechnology*. ■