



Educators Earth Day Sourcebook

Grades 7 — 12





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE ADMINISTRATOR

**AN EARTH DAY MESSAGE TO EDUCATORS
FROM WILLIAM K. REILLY
ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY**

Dear Educator,

Thank you for your willingness to teach your students about Earth Day and the environment.

Although Earth Day 1990 is April 22, all across the U.S.A., and in many places around the world, educational events of all kinds will be held the week before and the week after. We at EPA are working hard to make sure that it is not just a "one-time" event, but rather that it triggers long-term education and action to improve the environment.

Many of you, I'm sure, recall Earth Day 1970. It may be useful to you to have some background on that event and subsequent activities. In the late 1960s, a series of environmental horror stories gave rise to the first Earth Day as citizens across the land sounded the alarm. A river caught on fire. Cities were enshrouded by thick clouds of industrial pollution. Raw sewage was discharged into rivers. Automobiles released ten times the emissions of today's cars. Oil spills occurred with increasing frequency. And people said, "ENOUGH!"

Soon thereafter, the Environmental Protection Agency was formed to address these and other problems. By the late 1970s, dramatic progress was evident in water quality, reduced automobile emissions, and waste disposal. By Earth Day's tenth anniversary in 1980, however, a second wave of environmental challenges became paramount, often more subtle and difficult to address. Evidence of toxic chemicals appeared everywhere: in food, water, soil and air. Now, as the twentieth anniversary of Earth Day approaches, environmental threats are even more daunting: acid rain, global warming, habitat destruction, loss of wildlife and stratospheric ozone depletion.

What should we do? What can we do? First, we must recognize that, in one way or another, every sector of the economy — agriculture, housing, transportation, energy — and each of us as a consumer contributes to these problems. As President Bush said, "Through millions of individual decisions — simple, everyday, personal choices — we are determining the fate of the Earth. So the conclusion is also simple: We're all responsible, and it's surprisingly easy to move from being part of the problem to being part of the solution."

We cannot succeed without educating all sectors of society and involving people in meeting the environmental challenges ahead. We must act, and we must act together. We must start preventing pollution before it occurs.

Please urge your students and colleagues to join Earth Day celebrations that will take place in your community. Help them to become active in meeting the environmental challenges ahead.

Sincerely yours,

A handwritten signature in black ink that reads "William K. Reilly". The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

William K. Reilly

Teachers And Librarians

We are asking you to help spread the word about Earth Day 1990, to help focus your school's attention on the state of the planet. We are asking that you share this information with administrators, teachers, and students, and reach out to parents and the community with your activities so that everyone can participate and do something NOW to protect the environment. Let Earth Day be the starting point for continuing environmental education.

Although environmental issues often seem overwhelming, there are actions that can be taken by your students and their families which, while not difficult, are very helpful; they may even result in good environmental habits which will endure.

Suggested Activities

Here are some teaching ideas which may be used to start an environmental education program in your school. These ideas are designed to work across the entire school curriculum. Please share these suggestions with other science, English, mathematics, social studies, art, drama, music, physical education, and special education teachers. If we've left anyone out, please include them, too! Act now and get others in your school involved by means of projects that cross all areas of the curriculum.

- Plan a class discussion around the messages in this booklet. What other messages about caring for the planet could be included? What other messages about preventing pollution could be conveyed? How do you inspire people to take particular actions? What do you think is the most important message?
- Individual writing assignments can be done on any of the questions posed for discussion.
- Break class into small groups. Have each group design and prepare a poster to illustrate a particular environmental message. Share the posters with the class and discuss their messages.

For the School Library

- Create displays of posters, newspaper clippings, and books that deal with environmental pollution and actions

that can be taken to improve our environment. Use these displays for stimulating discussion among students in organized discussion groups in the library.

- Develop a reading list of books and articles in your library which are about the environment.
- Develop a "reader's guide" on how to use library resources about the environment.
- Promote reading a book on an environmental theme during this time period.
- Identify important historical and current environmental leaders and discuss how they made or are making a difference. Discuss how each individual can make a difference in the future of our environmental quality.
- Librarians, journalism teachers, or other interested teachers and students could write a newsletter for the school reporting on student activities on Earth Day, as well as activities in the community, nation, and the world.
- Librarians and teachers can invite speakers who have written books, articles, or newspaper articles about environmental issues or knowledgeable scientists from nearby universities or laboratories, to make themselves available to students in the classroom, library, or assembly.

Art Activities

- Have a poster contest on the theme of pollution prevention or any of the other concepts suggested in the vocabulary list. Acknowledge the winners in an all-school meeting. Display posters in public areas.
- Have a photography contest. Create a photographic exhibit of the pollution problems in your community, environmental improvements, or community efforts on the environment. Acknowledge the winners of this contest publicly.
- If you have access to the necessary equipment, make a class movie such as a "documentary" or a "news broadcast" about the environment.

English Activities

- Have an essay contest on the theme of pollution prevention or any of the related concepts listed in the vocabulary

section. Read winning essays in an all-school assembly. Have them printed in local newspapers and read in community meetings.

- Write poems about the environment.
- Write a play and read or produce it for the class or an all-school assembly. It can be on an environmental theme focusing on a crisis that develops in a family or community because of serious pollution problems. Bring out the depth of feelings that are experienced by the loss of wildlife, open space, forests, clean air, or water.
- Have students give speeches to other students, teachers, parents, and community leaders to inform, to inspire, or to take action to become non-polluters. Have them include requests for specific actions, like the initiation of a community-wide recycling program. Encourage them to speak at community meetings.

Science Activities

- Students can conduct a street or area tree inventory and develop a plan for planting new trees. Have them document the largest (diameter, height, spread) of each native tree species in your area.
- Children in urban areas can conduct an inventory of the effect of air pollution on trees, shrubs, and especially evergreen trees. Which trees should be growing in your area that are not there now? Note other effects like the loss of leaves, high rates of insect infestation, and, on evergreens, whether or not the needles have turned brown. Analyze your findings and discuss the implications for the future.
- Students can adopt a wetland, conduct a water monitoring project or observe and identify the variety of wildlife in a wetland area.
- Plan tests in your school and at homes for the presence of radon.

Music Activities

- Celebrate your appreciation of the planet by listening to classical compositions such as Beethoven's *Symphony #6 (The Pastoral)*; Richard Strauss's *An Alpine Symphony*; Ferde Grofe's *Grand Canyon Suite*; Smetana's *The Mouldau*, and folksongs such as Woody Guthrie's *This Land is Your Land* and Roll on Columbia and John

Denver's Rocky Mountain High. Folksingers' recordings about the dangers of pollution include: Pete Seeger's *Sailing Up My Muddy Stream*; Peter, Paul and Mary's *What Have They Done with the Rain*; Tom Paxton's *There Goes the Mountain*; John Denver's *Whose Garden Was This?*; and Malvina Reynold's *God Bless the Grass*. Contemporary rock singer Sting sings of saving the rain forests in *Don't Bungle the Jungle* and *Save the Rain Forest*. Peter Gabriel sings of the dangers of acid rain in *Red Rain*. Encourage students to write their own lyrics and/or music.

Social Science Activities

- Explore the terms "consumerism" and "conservation" through class discussion and written assignments. Discuss the concepts of "planned obsolescence" and recycling.
- Have students list actions that can be taken in support of pollution prevention and have them each decide what they will be responsible for doing.

Physical Education Activities

- Have students join with other community groups to celebrate Earth Day through such recreational activities as Earth Day runs, nature hikes, bicycle races, or rallies with an environmental protection theme. Such races could be held in local, state, or national parks.
- Organize a "Walk-or-Bike to School" day for students and teachers, promoting alternatives to the use of fossil fuels for transportation.
- Create a dance in honor of the environment.

School Outreach Activities

- Urge your local park system and local business offices to have students' environmental art displays on Earth Day, April 22, and the week after. Students could participate with other community groups such as community art classes, photography, after-school Head Start programs, and other local programs.
- Work with local zoos and nature centers to do a "wildlife protection" program.

- Have students contact the area library system urging a display of books, posters, and art work at all libraries in your community.

- Contact local government officials responsible for protecting and improving trees, flower beds, and other vegetation about local forestry and tree planting efforts and request them to publicize their efforts and needs during the Earth Day program.

- Encourage the use of consumer power by identifying and supporting "environmentally safe" products — use your money as votes for environmental betterment.

- Classes can write a letter to the local newspaper, signed by all students, urging concern about the environment and calling upon the community to participate in local Earth Day activities.

Vocabulary (Here are some selected vocabulary words associated with environmental assessment which everyone should know. You and your students can add to this list.)

General Environmental Words: ecology, ecosystem, habitat, gene pool, pesticides, deforestation, desertification, compost, biosphere

Related concepts: "cleansing effect of vegetation," "population explosion"

Waste Products Words: biodegradable, toxic, dioxins, PCBs, landfill, municipal wastestream, recycling

Air Pollution Words: ozone, nitrous oxide, carbon dioxide, carbon monoxide, chlorofluorocarbon, benzene, particulates, greenhouse effect, sulphur dioxide, smog, acid rain, ozone layer

Water Pollution Words: eutrophication, fish kill, algae bloom, oil spill, ocean dumping, sludge, groundwater

Social Concepts: consumerism, planned obsolescence, conservation, packaging, throwaway society

Some Books to Read on the Subject (Your librarian can add more . . .)

- Silent Spring* by Rachel Carson
- Practical Waste Treatment and Disposal* Edited by Denis Dickinson (A Halsted Press Book)
- Vanishing Air* (Ralph Nader's Study Group Report on Air Pollution) by John C. Esposito

Garbage As You Like It (A Plan to Stop Pollution by Using Our Nation's Wastes) by Jerome Goldstein [Rodale Press]

Radon: The Invisible Threat by Michael La Favore

Terracide: America's Destruction of Her Living Environment by Ron M. Linton

Water and Life by Lorus and Margery Milne

Must the Seasons Die? by Colin Moorcraft

GAIA - An Atlas of Planet Management Edited by Dr. Norman Myers

Worldwatch Paper 62: Water: Rethinking Management in an Age of Scarcity, December 1984

Worldwatch Paper 87: Protecting Life on Earth: Steps to Save the Ozone Layer. December 1988

Timetable for Disaster by Don Widener

Classroom Discussion Subjects

These pages can be reproduced for students so they can follow your discussion of the subjects shown.

You Can Make A Difference

Teach your friends and family about preventing pollution by your example.

Action by the President, Congress, and state legislatures, rulings by the courts, speeches by important people, or your wishing it — as important as they are — cannot, by themselves, clean up the environment or keep it from becoming more polluted than it is.

Millions of people cause pollution. Many people contribute to unsightly and unsafe neighborhoods, litter on highways, schools and to our homes, but millions of people can also help plant trees, create parks, save wildlife, and improve our oceans, rivers, streams and wetlands.

You can help. You can become a very important person in this effort.

Here are some things you can do: Please look at the page **You Can Help**.

You can teach your friends and family by your example to prevent pollution. Share this information with them.

One use is not enough. Recycle paper, glass, plastic, aluminum, scrap metal, motor oil, and yard wastes. Reuse, repair, and recycle as often as possible. Don't throw away what can be used again. Avoid creating unnecessary garbage by using wasteful disposables. Consider using reusable mugs, glasses, dishes, cloth towels, or sponges. Save your leaves, grass, and bush clippings to use as compost. Participate in a recycling program. Encourage your community and your school to begin recycling. Maintain and repair clothes and products. Donate usable clothes and materials to thrift shops.

Use less energy. Set back your thermostat, insulate your water heater, and buy energy-efficient appliances. Setting back the thermostat not only saves money, but also saves energy. It's an investment in yourself and your environment.

Cars — Buy energy-efficient vehicles and keep them tuned. Carpool, bike, walk, or use mass transit when possible. A well-tuned internal combustion engine makes your car, boat, or tractor safer for you and the environment. Carpooling and using mass transit, biking, and walking result less pollution being emitted. Disposal of auto waste is another significant problem. Used oil can contaminate water supplies; used auto batteries contain lead, lead sulfate, and sulfuric acid which can leak into soil. Take used oil, batteries, and auto tires to a recycling center or to an appropriate disposal facility.

Apply pesticides and herbicides carefully if they must be used. Follow instructions carefully. Use natural control materials whenever possible.

Noxious air (indoor air pollution) invades our homes and workplaces. Reduce tobacco smoke, radon, asbestos, and other indoor air pollutants. Americans spend more than 85% of their time indoors, so this is one of the most important areas where you can

protect yourself from environmental hazards. One of the most harmful hazards is radon, a naturally occurring colorless and odorless gas that seeps into homes through cracks in foundations or floors. It is the second leading cause of lung cancer — leading to 20,000 deaths a year. Commercial testing kits are helpful if directions are followed carefully. Another indoor air pollutant, tobacco smoke, which causes problems for both smokers and nonsmokers, further increases one's chances of developing lung cancer, especially when combined with radon. Formaldehyde in new furniture and carpets, pesticides, aerosols, household cleaners, and solvents from dry-cleaning are other common indoor pollutants.

Household hazardous waste — Buy only as much potentially toxic materials or products as you need. Dispose of remnants and containers properly. Be alert to labels. Materials that are toxic for people must be labeled "Dangerous," medium toxicity products are labeled "Warning," and low toxicity products are labeled "Caution." Store such materials carefully and use them up. If you must throw them out, check your local community's policy on hazardous waste disposal. Encourage your local community to institute a hazardous waste disposal plan if one is not in effect.

Environmental shopping — Buy recycled or recyclable products. Seek out biodegradable, reusable, or returnable packages. Look for the recycling symbol on products you buy. Such symbols identify recycled or recyclable products. For home and work, buy products that are made of recycled or recyclable material. Buy durable products — don't buy throw aways. Borrow or rent things you use infrequently. Avoid buying products which use unnecessary plastic or paper packaging. Use returnable or reusable containers. Look for pump rather than aerosol sprays. Buy rechargeable batteries for flashlights, toys, and household items. Consider carrying your own reusable shopping bag.

Lead — Be careful around surfaces covered with lead-based paint and be cautious when children are near renovation or rehabilitation of old buildings. Be concerned about lead in drinking water. Recycle auto batteries that contain lead. Older homes, especially those in poor repair or in need of painting, may contain old lead-based paint. The fine dust from deteriorating old paint and that created during renovation or rehabilitation of older buildings may contain lead particles. This dust can travel throughout the house and even outside. Keep children away from such areas. Your family might consider contacting an expert before undertaking such renovations.

EPA has found unhealthy contaminants in drinking water in some areas. Because lead and other contaminants may cause health problems, consider having your water tested if your house has lead pipes. Two drinking water precautions are to run water until it changes temperature, and use only the cold-water tap for drinking and cooking, especially for making baby formula. Lead can slow children's physical and nervous system development and cause other neurological, reproductive, and circulatory problems. Auto batteries contain lead and should be recycled or disposed of at appropriate sites to help reduce the amount of lead in the environment.

Plant trees, shrubs, and indoor plants. They replenish the Earth's oxygen supply and can provide habitat for wildlife. Plant trees or bushes in your yard or neighborhood. Trees in your yard may save you money in heating and cooling. They can beautify your property and increase its value.

You Can Help

Teach Your Friends And Family About Preventing Pollution By Your Example.

You can teach your friends and family by your example to help prevent pollution. Share this information with them.

One use is not enough. Recycle paper, glass, plastic, aluminum, scrap metal, motor oil, and yard wastes.

Use less energy. Set back your thermostat, insulate your water heater, and buy energy efficient appliances.

Cars — Buy energy-efficient vehicles and keep them tuned. Carpool, bike, walk, or use mass transit when possible.

Apply pesticides and herbicides carefully if they must be used. Follow instructions carefully. Otherwise, they can pollute air, ground, and water, and they can kill or harm beneficial insects as well as wildlife, pets and people.

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Selected Quotes About The Environment

“When we try to pick anything out by itself, we find it hitched to everything else in the universe.”
— John Muir

“And this, our life, exempt from public haunt, finds tongues in trees, books in the running brooks, sermons in stones, and good in everything.” — Shakespeare

... Integrity is wholeness, the greatest beauty is Organic wholeness, the wholeness of life and things, the divine beauty of the universe. Love that, not man Apart from that, or else you will share man's pitiful confusions, or drown in despair when his days darken. — Robinson Jeffers

“The need is not really for more brains, the need now is for a gentler, a more tolerant people than those who won for use against the ice, the tiger, and the bear.” — Loren Eiseley

“We travel together, passengers on a little space ship...preserved from annihilation only by the care, the work and, I will say, the love we give to our fragile craft.” — Adlai Stevenson