

THE ENVIRONMENTAL FAIR: OAK RIDGE'S SUCCESS STORY IN EDUCATIONAL OUTREACH

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ABSTRACT

On Friday, October 9, the grounds of DOE's American Museum of Science and Energy became a bustle of activity as nearly 3000 area middle-school students streamed in and around candy-striped carnival tents at the first Environmental Fair, an event sponsored by the Department of Energy (DOE) through its Environmental Restoration Program.

Sixth, seventh and eighth graders from the counties identified in the "Community Relations Plan for the Environmental Restoration Program on the Oak Ridge Reservation, Oak Ridge Tennessee" as well as students from the Tennessee School for the Deaf came to their fair for a day of fun and environmental education.

The objectives of the Fair were to help increase students' awareness of environmental cleanup work taking place in their own "backyard" of Oak Ridge, to increase their overall awareness of global environmental problems, and to encourage them to continue their educations so that environmental career opportunities will be available to them -- and make the experience a lot of fun.

Inside the tents the students met scientists and workers from DOE's Oak Ridge National Laboratory (ORNL), the Oak Ridge Y-12 Plant and the Oak Ridge K-25 Site, and area DOE contractor employees who offered hands-on learning about environmental work taking place on the Oak Ridge Reservation. More than 50 booths of scientific demonstrations, experiments and activities related to environmental awareness were featured.

A few examples of the environment-related demonstrations included: the "inchworm," a robot equipped with a TV camera that inspects pipes by crawling through them; an explanation of radiation found in everyday items; naturally-occurring microscopic "bugs" that eat waste; high-tech methods for treating industrial wastewater; a booth demonstrating the dilemmas of waste disposal which explained landfills; and threatened species including live screech owls and a red-tailed hawk.

Not every activity was an experiment or demonstration. Students crowded into tents that housed the "environmental arts." There, they could have their face adorned with an environmental message on white bandannas. Two large, white marker boards dubbed "graffiti walls" allowed students to graphically illustrate how they see the world today, and their wishes for tomorrow.

INTRODUCTION

The 1992 Environmental Fair was a community/educational outreach effort designed to enhance the educational experience of middle-school students -- a goal that serves both the Department of Energy's (DOE) educational interests and the community relations efforts of the Environmental Restoration Program currently underway on DOE's Oak Ridge (Tennessee) Reservation.

Because the reservation is a Superfund site regulated by the Environmental Protection Agency, public participation activities are mandated. The Community Relations Program of Martin Marietta Energy Systems, Inc., DOE's Oak Ridge managing contractor, is responsible for carrying out those public participation activities.

On Friday, October 9, 1992, the grounds of the DOE's American Museum of Science and Energy in Oak Ridge, Tennessee became a bustle of activity as more than 3,000 middle-school students streamed in and around candy-striped carnival tents at the first Environmental Fair. The Fair was sponsored by DOE through its Environmental Restoration Program.

Sixth, seventh and eighth graders from the five counties surrounding DOE's Oak Ridge Reservation, and also identified in the "Community Relations Plan for the Environmental

Restoration Program on the Oak Ridge Reservation," as well as students from the Tennessee School for the Deaf came to the fair for a day of environmental education and fun.

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the dilemmas of waste disposal which explained landfills; and threatened species including live screech owls and a red-tailed hawk.

Not every activity was an experiment or demonstration. Students crowded into tents that housed the "environmental arts." There, they could have their face adorned with an environment-related logo, such as a dolphin, or could create their own environmental message on white bandannas. Two large, white marker boards dubbed "graffiti walls" allowed student to graphically illustrate how they see the world today, and their wishes for tomorrow.

OBJECTIVES

The Environmental Fair was a "pilot" effort with three stated goals:

- to increase students' awareness of environmental issues,
- to showcase environmentally related work performed at the Oak Ridge Reservation,
- and to spark students' interest in environmental careers.

To achieve these goals, the fair included broadly diverse activities such as an environmental obstacle course, a waste management activity known as "Wheel of Waste" and Food Chain Tag (an activity that demonstrated how contaminants are passed through the food chain). Researchers' topics ranged from acid rain to rain forests.

AUDIENCE

Approximately 3,000 middle school students (sixth, seventh, and eighth graders) from five area counties attended the Fair. Most students stayed all day and came from city and county schools in Anderson, Loudon, Meigs, Rhea and Roane counties. Efforts to meet this population's language and interest levels were emphasized.

Three Martin Marietta Adopt-A-Schools also attended: Vine Middle School and the Tennessee School for the Deaf (TAD), both in Knoxville, and Wartburg Central Elementary School. Interpreters and Martin Marietta hearing-impaired employees served as "buddies" to the TAD students in order to make the day more rewarding for them.

BUDGET AND COST-EFFECTIVENESS

Because this was a pilot effort, some of the costs (such as most artwork) were one-time-only expenses. The fair budget was \$60,000, which proved to be a realistic goal. This dollar amount accounted for materials, rentals, printing and related costs, etc. What is not reflected in this amount is the time "donated" by the several hundred DOE, Martin Marietta and other contractor employees to plan and staff the activities.

Because the fair was considered a cost-effective and rewarding event, DOE has decided to make the Environmental Fair an annual event.

RESEARCH

DOE has conducted one similar effort at the Hanford, Wash., site. Although this fair was much smaller and was designed for a broader-age-range audience, it was reviewed and found to be worthwhile.

The Environmental Fair was structured to reach a larger and more focused audience. Its audience had specific

needs, such as hands-on, fun-filled activities delivered at a seventh-grade language level.

PLANNING AND EXECUTION

A steering committee formed in March 1992 represented various internal organizations, particularly environmental and public affairs groups. The members met regularly and were active during Environmental Fair preparation and on the day of the event. Additionally, three Community Relations staff members organized the three key areas: activities, volunteers and school coordination.

All these efforts culminated on October 9, 1992, when more than 3,000 students converged on the grounds of the American Museum of Science and Energy to participate in 50+ environmentally related activities.

In support of the Environmental Fair, a Communications Plan was developed by members of the Oak Ridge National Laboratory public affairs staff. This plan defined the following projects, tasks and actions that were conducted at various times before, during and after the Fair.

- **Criteria for Project Evaluation:** This criteria defined intended audience and the desired quantifiable results.
- **Student Review Group:** Students were interviewed and tested before and after the fair. They provided opinions on activities, graphics and prizes. The information from this effort was used to build the activities and foundation of the fair.
- **Teacher Interviews:** A teacher from one of the invited schools joined the steering committee during the summer planning period and provided input before and after the fair.
- **Readability Review and Recommendations:** This service was made available and recommended to all activity hosts. Review of displays, posters and handouts resulted in some researchers extensively rewriting their copy to meet audience needs.
- **Graphics development:** Steering committee members and Martin Marietta graphic artists were involved in developing an Environmental Fair logo, passport (a map with a legend of activities), poster, promotional buttons, volunteer caps and visors, tote bags and report covers.
- **Other Key Tasks for Implementation of the Environmental Fair Activities:**
 - Planning and implementing media relations
 - Developing information packets for schools and volunteers involved with the Fair (i.e., fact sheets, question-and-answer sheets, school information, activity hosts and volunteer information, facilities layout and bus attendant loading and parking information)
 - Volunteer recruiting
 - Internal communications
 - Photography
 - Lessons Learned Report
 - Documentation

EVALUATION

Written evaluations were provided by teachers both at the EnvironMENTAL Fair site and following the event (see fig. 1). The student review group was administered a formal evaluation (post-test) instrument, which demonstrated a heightened awareness of environmental issues and work performed in Oak Ridge. An information student group interview served as an evaluation tool.

Based on the positive results of the various evaluations, DOE assessed that the EnvironMENTAL Fair is a valuable resource to educate its young public about environmental work taking place on the Oak Ridge Reservation, and an important opportunity to enhance students' educations and possibly prepare them for environmentally related careers.

Another added benefit of the EnvironMENTAL Fair was the opportunity it provided to bring together so many DOE and contractor employees from very diverse organizations for one central cause -- the education of our younger generation.

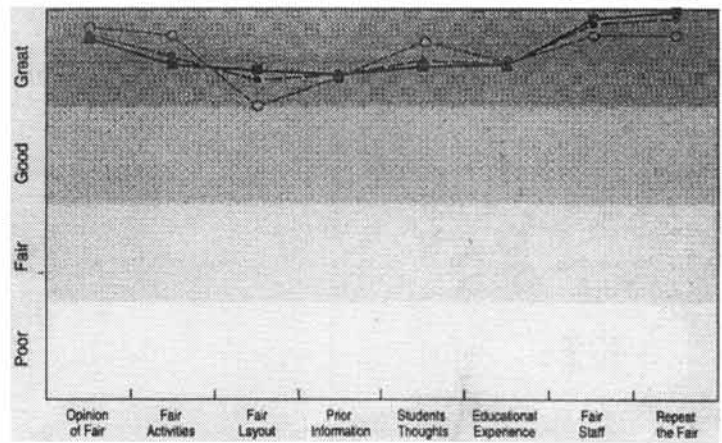


Fig. 1. Fair evaluation-survey results.