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UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D.C. 20655-0001 PDR

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Ms. Joan Right, Executive Director Public Employees Roundtable P.O. Box 14270 Washington, D.C. 20044-4270

Dear Ms. Right:

I am pleased to nominate the NRC School Volunteers Program, which is administered by our Office of Public Affairs, for the 1997 Public Service Excellence Awards Program. The Commission appreciates the opportunity to participate in this awards program.

PDR: per D. Mossbus

Sincerely,

Shirley an Julion

Shirley Ann Jackson

Enclosure: Nomination Package

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## PUBLIC SERVICE EXCELLENCE AWARD APPLICATION

#### Summary

The U.S. Nuclear Regulatory Commission's School Volunteers Program was established 10 years ago to forge a partnership between employees and schools in an effort to improve science and math education in local schools. Originally based in the agency's Rockville, Maryland, headquarters, the program has successfully broadened to its four regional offices in Pennsylvania, Georgia, Illinois, and Texas, and involves almost 500 employees nationwide. This represents about one sixth of the total number of NRC staff.

The school volunteer program has been praised on many occasions for outstanding service and for its commitment to assist schools, students, and teachers. Volunteers use a combination of agency time and their own personal time to assist students in many other aspects of their education - building confidence, self-esteem, and pride in their ability to learn math and science concepts, as well as to deal successfully with complex principles and ideas.

### Program Description

The NRC School Volunteers Program was established in keeping with the spirit of the National Partnership in Education Program initiated by President Reagan in 1983. It represents an extension of our participation in the National Service Act of 1990 which encourages Federal employees to become involved in partnership programs with schools to improve the quality of education in America. The program is intended to improve the educational community's indepth teaching, offering personal involvement with students to stimulate their interest in science and technology.

Over the years, NRC has developed a cadre of highly trained and talented professionals who regularly volunteer in Washington Metropolitan Area schools, as well as in schools close to our four regional offices. Our volunteers have backgrounds in engineering, physics, law, geology, human resources, statistics, chemistry, mathematics, computer science, journalism, biology and health sciences, as well as in administrative areas. Almost 500 employees at NRC are involved in numerous volunteer activities at about 300 schools. Our volunteers lecture in classrooms, participate in career awareness seminars, serve as science fair mentors and judges, and counsel and tutor students and teachers on specific topics. Volunteers work with students and staff ranging from first grade to college level.

Although the program started as a partnership between the NRC headquarters office and Montgomery County, Maryland, it has since expanded to include Prince Georges, Howard, Anne Arundel, and Frederick Counties, as well as Washington, D.C. and Virginia area schools. We also recently established volunteer efforts at schools in communities near our four regional offices. For example, our Arlington, Texas, office initiated a program called "HOSTS" -Help One Student Succeed - at which NRC employees mentor local students and help with reading skills. Six NRC employees visit an elementary school to tutor students in reading for a half hour each week for the entire school year. In addition, we have helped teachers to understand the regulation of nuclear reactors, materials, radioactive waste, and other issues involving nuclear safety. We have provided hands-on activities to demonstrate how the agency uses science, math, and technology to resolve the complex problems it faces in regulating nuclear energy and radioactive materials used in medicine and industry.

### Scope

NRC was originally contacted by Montgomery County Public Schools to help fill a void in science and math education that budget cuts and class size changes had created. Since then, NRC volunteers have visited classrooms over 1500 times. Our employees provide a hands-on education to students and offer them a real-life example of the types of jobs available to those who pursue science and math careers. This encourages and motivates students to learn about issues and subjects to which they otherwise may not have given much thought in choosing a career path.

Our employees work hard to develop an interesting presentation and then actually sacrifice time at work and at home to visit schools. Two people coordinate this program agency-wide. The annual cost is less than \$2,000. The participation of NRC staff is entirely voluntary; activities such as tutoring and mentoring must be done on the employee's own time. However, activities which provide information about the agency, such as explaining NRC's functions and describing careers at NRC, are regarded as excused absences. Although employees have not formally been trained to make presentations at schools, the volunteers have performed extremely well and are frequently requested by teachers for future class presentations because of their motivation and detailed knowledge of the industry. The Office of Public Affairs has a resource library and provides hands-on classroom demonstrations, as needed, to assist the volunteers in their efforts.

We have also been instrumental in establishing the Science and Technology Workshop for Educators in Montgomery County. The NRC, in cooperation with the Montgomery Education Connection, began chairing a Science Committee six years ago to develop a science-oriented workshop for teachers. Since then, fifteen local member businesses, including NRC, annually have hosted a group of 15-20 Montgomery County teachers for one day, incorporating demonstrations, tours, and lectures featuring the latest technology and developments in their field. The workshop has been highly successful in giving teachers a new perspective on the use of technology in the workplace and they, in turn, can provide students with a meaningful connection between classroom activities and potential careers in science and technology.

Last year, we participated in an experimental pilot program at Walter Johnson High School in Bethesda, Maryland, called the Technology and Research Program. This year-long program involved the students in a real-life, problem-solving exercise -- an actual site decontamination project which NRC has already undertaken, allowing students to perform the research, calculate doses and make a final recommendation. NRC provided guidance and met with students periodically to check progress. We even had a "mock" Congressional hearing to broadly recreate the actual hearing held in 1989 which focused on contaminated sites and the particular Pawling, New York, site the students were working on. The program, although very time-consuming for the NRC staff, was very rewarding for the students as well as for our employees. It gave the staff an opportunity to observe students connecting real problems to classroom learning.

### Quality of Service

Judging from the positive feedback we have received, our employees have provided a much needed service to local schools. Employees who volunteer are highly motivated to help students and teachers by sharing their knowledge and enthusiasm about their specialties. We have recognized employee efforts through agency-wide publications (Enclosure 1) and letters of appreciation, as well as volunteer appreciation ceremonies and awards events with the Chairman and Commissioners of our agency.

As a final touch to their year-long effort helping students work on science projects, NRC employees participate as judges in the Montgomery Area Science Fair, the largest and most prestigious fair in the county. Six students receive an NRC Special Award for their projects which must be somehow related to the mission of the NRC. The winning students are then invited to share their projects with our top policymakers, the Commissioners, and the rest of the NRC staff. The judges are also recognized and receive an award for their efforts throughout the year. The students and their families are then invited to join the judges in an award luncheon afterwards. First place winning students also receive a one-year subscription to the science magazine of their choice.

The volunteer program offers students and teachers interesting and innovative projects to help explain nuclear science and the role of NRC in nuclear safety. Three years ago, we began offering "packaged" classroom activities (Enclosure 2). These are boxes of organized, hands-on activities that volunteers can perform with students in the school. They cover diverse subjects such as radiation, nuclear power, energy, transportation, and math problems. We also have a portable reactor model, which can be taken apart to demonstrate the inner workings of a nuclear reactor. These activities supplement other resources (e.g., materials, slides, overheads, and equipment) that the NRC makes available to volunteers. Many volunteers also develop their own activities that capture student interest, which makes them eager to learn more.

### Effectiveness Measures

This year NRC received an award from the Montgomery County Alliance for Educational Excellence for its partnership with Montgomery County schools for the science and technology workshop. This workshop incorporates demonstrations, tours, and lectures featuring the latest technology at NRC and focuses on skills students will need when they enter the workforce. Fifteen businesses in the County participate in the week-long workshop, which many veteran teachers consider the most valuable in-service course they have ever taken (Enclosure 3). The workshop helps Montgomery County teachers develop a science and technology curriculum used throughout high schools in the county. Dr. Paul Vance, Montgomery County Public Schools Superintendent, is very supportive of this effort and regards it as one of the few opportunities provided for teacher development and in-service credit (Enclosure 4). NRC helps give teachers the opportunity to learn first-hand about science and technology applications in the current workplace and allow them to actively participate in "hands-on" activities, tours, and demonstrations. Clearly this demonstrates the importance we attach to improving education while giving something valuable back to the community.

We also received an award from the Montgomery Education Connection for our efforts in helping out in the classroom. Our many letters of thanks, support, and appreciation from teachers and students who look forward to NRC's involvement each year are a testament to the success of the program (Enclosure 5).

Enclosures:

- 1. Article in "News, Reviews & Comment" about NRC volunteers
- 2. Flier distributed to employees about classroom activities
- 3. Evaluation of Science & Technology Workshop by a teacher
- 4. Letter of thanks from Superintendent Paul L. Vance
- 5. Letters of appreciation from teachers and students



# school Volunteers Program

When some students in Montgomery County (Maryland) returned to school this fall, they found teachers who might be just a little better prepared to tell them what to expect when they leave the classroom -- and how what the students are learning in the classroom relates to the rest of the world. These are the students whose teachers participated in this year's Science and Technology Program for Educators, sponsored by the Science Committee of the Montgomery County Education Connection.

Fifteen area businesses and government agencies each hosted a group of fifteen to twenty teachers for one day, and, once again, NRC Headquarters at White Flint was a popular choice of the educators.

The teachers who came to NRC heard and saw Rick Hasselberg of the Office for Analysis and Evaluation of Operational Data give a demonstration of a classroom



presentation on reactor safety, and Heather Astwood and Bernard White of the Office of Nuclear Materials Safety and Safeguard demonstrated two potential classroom activities which they entitled Handle with Care and Site Up and Listen!

After the lunch break, Joseph DiCicco talked to the teachers about radioactivity in everyday objects. The day's activities concluded with the always popular tour of the Operations Center in Two White Flint North.

The Montgomery County Education Connection has been sponsoring the summer seminars for the past five years This year each of the participating firms and agencies sponsored a day-long program, with three programs scheduled for each day. Teachers could go to one each day for a week.

THE TFACHERS WERE EAGER LISTENERS, as shown in the photos at the left, top and bottom, while Heather Astwood, upper right, makes her presentation.

September 1995 NR&C

# **School Volunteers Program**



# As Part of Summer Training Program

Mindy Landau of the NRC Office of Public Affairs, the coordinator of the NRC School Volunteers Program, serves as chairman of the MEC Science Committee

In her letter to the participating organizations, she noted that the workshops have been "highly successful in giving teachers a new perspective on the use of technology in the workplace and they, in turn, can provide a meaningful connection between classroom activities and future jobs."

Among the businesses participating were Martin Marietta Laboratories. TRW Systems Integration Group, Potomac Electric Power Company, Hewlett Packard, Bell Atlantic Corporation, Fusion Systems, and Shady Grove Adventist Hospital. Federal agencies and organizations included, in addition to NRC, the U. S. Army Research Laboratories in Adelphi, Maryland, and the National Institute of Standards and Technology (formerly the National Bureau of Standards) in Gaithersburg.

presentations on the more detailed aspects of their missions with those teachers more familiar with the subject matter. The presentations for elementary school teachers focused on business and other applications that could be more readily adapted to suit their students

As Mindy noted, not only does the program give teachers a first-hand opportunity to learn about science applications in the current workplace, businesses will benefit by having better prepared students as job candidates

As a result of comments on last year's program, this year science and technology teachers at the secondary school level were separated from those who teach at the elementary school level. This allowed the more technically oriented firms and agencies to focus their

SOMETIMES THE TOPIC REQUIRED MORE CONCENTRATION and even, as shown in the photo at the upper left, provoked a bit of consternation on the part of the teachers.



The Office of Public Affairs is unveiling a NEW series of classroom activities for its school volunteers. It's called, "Exploring Nuclear Energy."

Enclosure

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The series has ten different Hands-on Activities which bring Nuclear Energy into the Classroom for Grades K-12. Available classroom activities are:

- Handle With Care
- Site-Up and Listen
- Radiation
- Your Grandmother's Attic
- Risky Business
- The Meaning of Half-Life
- and more . . . .(see reverse)

REACTOR MODEL

These activities can save a lot of time spent designing your own presentation -- They're already done for you!



If you are interested in using the class activities or the model reactor for any of your classroom presentations, please stop by the Public Affairs Office at 0-2-G-5 or contact Mindy Landau (415-8200) and we can loan them to you.

Enclosure 3



AND

TECHNOLOGY

PROGRAM

FINAL

1. 4

EVALUATION

NAME: Paula White SESSION: 3 JOB TITLE: Chemistry Teacher GRADE LEVEL: 10-12

They need and nuclear reactors work and how fission works

<u>explained now nuclear reactors work and now respective correct</u> to create energy, along with electricity. Their plan of attack in case of emergencies is very thorough. Many science related careers in this agency - especially environmental sciences!! Problem solving is constantly used in this agency. We did an activity where we tried to locate a good site for a low level radioactive waste facility in Mont. county. Wonderful activity and difficult task. The last session on radioactivity in everyday objects was great!! and something easy to apply in high school level classes.

DAY 2. COMPANY American Red Cross OVERALL RATING: 1 (2) 3 4 5 (1-POOR, S-OUTSTANDING) COMMENTS: Some topics of current research were interesting The day was thrown together and the people there did not know what type of teachers we were. They assumed we were biology teachers (NOT TRUE!). The tour of one lab went over alot of peoples heads and it wasn't simplified to laymon's terms. Really did not pick up anything that was applicable for the classroom.

# DAILY LOG

DAY 3- COMPANY Bell Atlantic (1=POOR, 5=OUTSTANDING) OVERALL RATING: 1 2 3 4 5 COMMENTS: The people were very enthusiastic and happy to have us there. The morning session about internet access and distance learning was very appropriate to our situation. The people were extremely knowledgable and personable. The afternoon session dealing with how we get our dial tones was interesting but no practical applications in the classroom were seen. Learned allot about coreer backgrounds and job skills heeded, however,

# DAILY LOG

COMPANY US Vatent and Trademark Office (1=POOR, 5-OUTSTANDING) 4/5 3 OVERALL RATING: 1 2 COMMENTS: Well prepiared and organized !! Fascinating to learn about the process of patenting an invention. We had one and fantastic session where a man got us energized to think about inventions and getting our kids involved in inventing We learned a great deal about the thinking processes kids needed to pagacquire and we were given two books with many applicable lesson ideas to build these skills. Very interesting careers available for science majors who may not want to do basic or applied research.

# DAILY LOG

DAY 5. JOMPANY Shady Grove Hospital (1=POOR, 5=OUTSTANDING) OVERALL RATING: 1 2 3 4 5 COMMENTS: Pretty good day. Well organized plan for the day. Learned a lot about different medical practices and Kehniques. RN's are extremely knowledgeble and guided us through many of the tours. Lots of applications of bood science principles used in any the medical field.

## FINAL EVALUATION

The final evaluation is designed to allow you the opportunity to develop ideas on how you can apply what you have learned in the last 5 days. Please complete the following evaluation and related questions. Together with your Daily Log these instruments provide useful information in preparing for future programs of the MEC Science and Technology Program for Educators (hereafter MEC).

 How have your attitudes about business and its relationship to education changed as a result of MEC program?

So many bronze businesses these days are really, Not the education field. This was to give buck merely confirmed and strengthed by this class. Name 3 changes in your curriculum or program you plan to make as a result of the MEC. 2 - greater emphasis is thought process skills greater emphasis on careers. share info with our science club sponsor to bring in speakers. What actual or potential barriers do you see in educating your students for the year 2000? 3. ain old thinking. So many kids survive by doing minimum amounts of actual reflection or using process to arrive at answers to questions. We need critica Skills Alche thinkers and planners to get us into the 1000 rentury. next COMMUNICA MEC relevant to your work with students? If yes, how? If no, how could it have been Was the more relevant? 103 - it sous serves as a guide for me to encourage interested students in science related careers. I've learned now the education more about people's job titles and, work and that is needed of MEC address the needs educators in your discipline and/or subject area? In what way did the 5 We need to stress writing and organizing clear communication of laras.

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page 2 what adjustments could be made to the program to more specifically meet the needs/interests of 6. educators in your area of expense? Find out what the businesses do before hand and stress to them that they need to provide concrete examples a for educators from elementary school to high school. A business that can't adapt this way should be excluded. Which sessions were the most useful? Why? 7. NRC, US Patent and Trademark Office. They both gave concrete examples of how we can use in the classroom. vninciples the Which sessions were least useful? Why? 8. Cross - Not appropriatly presented befor American etementary teachers. ALAND What was your primary reason for enrolling with the MEC? 9. wanted to learn what goes on in some of these businesses. Were your expectations for the in" a met? Please explain. 10. personally ormed of a lot. I wish I knew some this when I was searching for a conver, Some of my perception about what These businesses to was I was able to walk away with a new changed. VICWPOINT.

page 2

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7.

8.

Which sessions were the most useful? Why? NRC, US Patent and Trademark Office. They both gave concrete examples of how we can apply principles this use in the classroom.

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1 wish I knew some personally learned of a lot. this when I was searching for a conver, Some of my perception about what These businesses do was was able to walk away with a new changod VIEWPoint.

page 3 MEC what information or experiences should they In inviting businesses to participate in the 11. be asked to provide? rey should be able to provide concrete examples of how aspects of their business are applicable to the We need to know what kinds of the skills to ASSTOOM. teach our students to prepare then for the job market. MEC? How did you find out about the 12. Jer What would be the most effective means of attracting participants to the MEC? 13. Describing to them how their participation could benefit furture scientists contractions (or other fields) by shaving what to survive in their field skills are needed **MEC** personally? What have you gained from the 14. Same answer to 11 How will you incorporate information from the seminars into your work with students and or 15. teachers? as question 2 Same MEC to your colleagues? Why or why not? Would you recommend participation in the 16. they must choose the session wisely



Friday, June 23, 1995

# **BACK TO SCHOOL**



Waters Landing Elementary teachers Carel Boebel (left) and JoAnn Rollek (center) along with Gaithersburg Middle School teacher Shelia Shipmon attend a workshop at Hewlett-Packard.

# **Teachers return to class** for lessons in business

## BY ANDREW D. BEADLE

The next time a student asks Shelia Shipmon, When will I ever need to use this?" the teacher can quickly respond. "When you get into the business world

The seventh-grade life sciences teacher at Gaithersburg Middle School and 44 other county teachers spent the first week of the summer break visiting businesses in the county. They learned not only what leaders expect from their new employees, but also new techniques to use in the classroom

I'm so excited about it." Shipmon said yesterday

after a daylong presentation at Hewlett-Packard Rockville. "It gives us an insight, and (students) c see a real correlation. They have to have a reason learn it.

One of the things teachers were taught was to u more teamwork among students in the classroo Hewlett-Packard relies on teams of people, not in so much better," she said. viduals, to solve problems, said Pete Cage, a national quality program administrator.

Working in groups takes longer, but you make better decisions, 'Cage said.' Better ideas will result from that discussion, it's worth the effort.

It takes time to build a team, and the sooner people learn to work together, the better prepared they'll be for the workplace, Cage said. "I don't think people work in

teams naturally. You really need to kick-start them," Cage said.

He introduced a game that helped teachers understand the benefits of working together.

"When we're focusing on reading and math, we sometimes forget what else is needed in the business world," said JoAnn Rollek, a thirdgrade teacher at Waters Landing Elementary School in Germantown.

Teachers spoke with computer specialists, biotechnology scientists, engineers and communications specialists.

The free seminars have been run for five years by the Montgomery Education Connection, a nonprofit organization that works with businesses and educators. Three daylong workshops were held each day this week. Teachers signed up for five sessions, selecting from 15 partici-

pating companies.

In addition to Hewlett-Packard, Shipmon also spent time at the Pepco plant in Clarksburg. Other participating companies included the Holland Labs of the American Red Cross, the U.S. Nuclear Regulatory Commission, American Type Culture Collection and TRW.

The companies approached the school system because they saw a need for better trained workforce, said June Bogushefsky, MEC executive director.

"I have them hammering at my door," she said.

The seminars help teachers understand what companies, especially high-tech businesses, expect from students, said Jill Uttridge, branch manager at Hewlett-Packard.

"We provide teachers with an opportunity to take exposure to our workplace back to the classroom," Uttridge said.

Shipmon plans to invite some of the professionals she met to her classroom.

"It's going to make the classroom