LANL
Los Alamos News Letter
A publication of Los Alamos National Laboratory
Vol. 2, No. 3 • Feb. 8, 2001

# SCORR scores big

*by Kevin Roark*

Los Alamos scientists have developed a new technology application that could all but eliminate the use of hazardous corrosives and the production of wastewater in the fabrication of integrated circuits, or chips, for computers.

Chip making is sometimes called a "clean industry" because of the images of technicians in white lab suits working in ultra-clean rooms with shiny pristine silicon wafers. But it is estimated that on the average day of operations at a chip-making plant, four-million gallons of wastewater are produced and thousands of gallons of corrosive hazardous materials, like hydrochloric and sulfuric acid, are used.

The new technology, called SCORR, focuses on photoresist removal, one of the steps in a process called photolithography, where high intensity light along with aggressive acids and corrosives are used to create a chip's tiny integrated circuits by altering the topography of a silicon wafer. Using carbon dioxide at high temperature and pressure, known as supercritical carbon dioxide ($SCCO_2$), in place of the hazardous materials, Lab researchers have demonstrated a technology that inexpensively replaces the solvents as well as the tremendous quantities of ultra-pure water that are used to wash those solvents away.

"Carbon dioxide, at pressures above 1,050 pounds per square inch and temperatures above 31 degrees centigrade, becomes supercritical," said Craig Taylor, who leads the SCORR team in Applied Chemistry Technologies (C-ACT). "In its supercritical phase the gas becomes liquid, but behaves a little like both — giving it the ability to act as a solvent. But $SCCO_2$ alone is somewhat ineffective, so we combine it with minor amounts of a more effective cosolvent, and we've seen that this mixture is quite effective at photoresist removal.

"On top of that, when the pressure and temperature are lowered, the $SCCO_2$ returns to its gas phase, leaving the silicon wafer bone-dry and virtually free of any dirt, eliminating the

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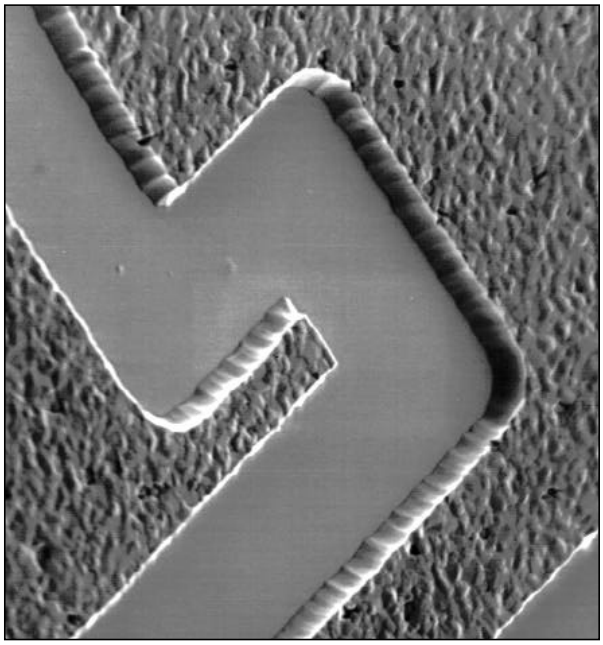

***Scanning Electron Microscope image of an aluminum metallized photoresist-coated silicon wafer following SCORR treatment. The photoresist is clearly removed from even the deepest recesses of the aluminum structures and those structures appear to have suffered no ill effects from the process.***

## Inside



## *New policy council will review proposed policies and procedures*

*by Kay Roybal*

The newly formed Advisory Council on Administrative Policies and Procedures, which recently approved the Employee Referral Initative Program [see story on Page 2], was created to discuss existing or proposed administrative policies.

"ACAPP reflects [Laboratory Director] John Browne's determination to get feedback and input from the Lab's employees on issues that directly affect them," said Joe Salgado, deputy Laboratory director for Business Administration and Outreach. "We expect that ACAPP will lead to more effective policies and procedures and will help assure that BAO actions support the Laboratory's science and technology mission as efficiently as possible."

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# New policy …

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ACAPP members, selected by their division or directorate leaders, are: Barb Stine, representing Nuclear Weapons; Darrell Morgeson, Threat Reduction; Al Sattelberger, Strategic and Supporting Research; Allen Hartford, Science and Technology Base Programs; and Tom Gunderson, Operations. ACAPP is staffed by the Human Resources (HR), Business Operations (BUS), Information Management (IM) and Communications and External Relations (CER) divisions.

"Joe Salgado wanted a process to vet proposed administrative policies and give managers an opportunity to weigh in," said Helga Christopherson, director of HR. "We want to make sure that these kinds of decisions aren't made in a vacuum. The council's input also will allow us to connect what's done policy-wise with the needs and activities of the rest of the institution."

The Los Alamos Review and Comment Process (RevCom) has long been available for employees to express their views on new policies or policy changes that affect the terms and conditions of their employment. Policies or changes that impact a broad cross-section of employees are put on RevCom and employee comment is encouraged. A recent proposal to change the 9/80 schedule during the Christmas break was scuttled in the wake of negative response on RevCom. ACAPP may fill a similar review function for managers.

"I was pleased to be chosen to serve on the ACAPP," said Hartford. "The assignment gives me the opportunity to have early involvement in formulating and commenting on policies and procedures that will benefit Laboratory employees. My objective is to help improve the work environment and the climate for conducting our science and technology."

ACAPP meets as needed at the call of Salgado, the chairman of the council.

# SCORR …

*continued from Page 1*

need to rinse with ultra-pure water and dry with isopropyl alcohol. And the best news, carbon dioxide is cheap, nonflammable, nontoxic, biodegradable, recyclable and plentiful."

The photoresist removal technology produces virtually zero hazardous waste. It is designed as a closed-loop system that reuses the carbon dioxide in the process, adding no greenhouse gas to the atmosphere. Because of their low vapor pressure, the additive cosolvents are easy to separate from the mixture, and so they, too, are collected and reused.

A key element in the process is a tiny high-pressure sprayer that pulses the $SCCO_2$/cosolvent onto the silicon wafer to assist in dislodging the photoresist. Developed by technician Jerry Barton, the sprayer creates enough surface drag to dislodge the microscopic bits of photoresist already softened up by a minutes-long soaking in the $SCCO_2$/cosolvent mixture. This combined process of soaking and spraying, along with an $SCCO_2$-only wash, has produced results that equal the chip fabrication standards currently accepted in industry.

The early work on this technology was accomplished through a Cooperative Research and Development Agreement with computer manufacturer Hewlett-Packard. Research and development continues with IBM and GT Equipment Technologies Inc.

In addition to Taylor and Barton, the SCORR team includes Leisa Davenhall, Kirk Hollis, Gunilla Jacobson, Jim Rubin and Laurie Williams.

## ISM Corner

### When the weather outside is frightful ...

For the latest in Lab closure information, call the UPDATE hotline at 667-6622 or the toll free number at 1-877-723-4101, or check the online Daily Newsbulletin at *http://www.lanl.gov/newsbulletin*.

For more information about the Lab's Early Dismissal/Closure/ Delayed Opening Plan, call 667-6211. An electronic version of the plan can be found at *http://int.lanl.gov/orgs/s/s8/p15.shtml*.

# Cash incentive offered for help with strategic hires

*by Kay Roybal*

They say it pays to read the want ads, even if you're not looking for a job. For Laboratory employees, that could be literally true. A new program in effect since Jan. 2 allows employees to receive a cash incentive for successfully referring a candidate for a targeted job.

Under the new Employee Referral Incentive program, hiring officials may pay an employee up to $2,000 for identifying a hot prospect from outside the Laboratory for a job requiring "critical, highly competitive skill, knowledge and experience." If the prospect is hired, the finder's fee will be paid 90 days later.

Even during hiring moratoriums, exceptions may be made for so-called "strategic hires" to fill critical positions.

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**LANL**

**LANL, the Laboratory bi-weekly publication for employees and retirees, is published by the Public Affairs Office in the Communications and External Relations (CER) Division. The staff is located at TA-3, Building 100, and can be reached by e-mail at *newsbulletin@lanl.gov,* by by fax at 5-5552, by regular Lab mail at Mail Stop C177, or by calling the individual telephone numbers listed below.**

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**Please recycle**

# Beryllium Technology Facility opens

*by Kevin Roark*

The Laboratory's new Beryllium Technology Facility in Technical Area 3 is now open for business. Designed to be the state-of-the-art in beryllium operations and safety, the facility's manufacturing capabilities include a full range of powder preparation, plasma spray, evaporation, casting, pressing, machining, coating, welding, brazing and other machining processes.

Beryllium is a silver-gray, nonradioactive metal that is lighter than aluminum, yet stiffer than steel. Beryllium and its alloys have a wide variety of applications in spacecraft, nuclear reactors and such products as aircraft brakes and golf clubs. At the Lab, it is used in nuclear weapons research and stockpile stewardship.

Because the inhalation of fine particulate beryllium is a health hazard, worker safety is of the utmost importance. The ventilation system, designed to surgical operating room criteria, changes the air up to 15 times an hour. All supply air comes from outside and is not recirculated. It is filtered with high-efficiency filters to ensure a clean environment. A direct-digital-control system provides continuous, active monitoring of all airflows, creating differential room pressures that always keep more hazardous operations at less pressure.

Waste materials are removed by a high-pressure, high-velocity exhaust system that captures particulates and aerosols at the point of generation and removes them from the operating environment. Waste is minimized by collecting particulates from each workstation first with a cyclone separator and then in a central filter baghouse. The particulate waste product is recycled through the in-house foundry and reconfigured into solid ingots.

The facility boasts several design features for increased safety and security. There is an on-site laboratory for the analysis of air and surface samples, providing timely feedback to operations personnel. There are stringent access controls, and state-of-the-art electronic communications throughout the facility help limit access to and removal of material from the facility. Computer lines provide general data transfer throughout the facility, eliminating the need to carry paper in and out. A closed-circuit television system permits remote viewing of operations.

The facility also includes self-contained housekeeping and laundry facilities to prevent movement of contaminated articles beyond the operations area.


***Small beryllium shapes, like this rod and pellet, are used to demonstrate the look and feel of engineered parts made from machined pure beryllium.***

***The new Beryllium Technology Facility, has a state-of-the-art exhaust system. Below: The ventilation system changes the air up to 15 times an hour.***

***Rick Lauer of the Engineering Sciences and Applications (ESA) Division demonstrates a machining process inside the new Beryllium Technology Facility during a recent tour.*** *Photos by Kevin Roark*

# A welcome 'back-seat driver'

*by Nancy Ambrosiano*

A computer system developed by the Laboratory's Advanced Surveillance Technology team in Safeguards Systems (NIS-7) is a kind of "back-seat driver" that speaks up when nuclear waste transport drivers waver off course.

Ever since a truck bound for the Waste Isolation Pilot Plant took a wrong turn in Santa Fe last fall, drivers have been under closer scrutiny than ever. The existing system tracks their progress toward the plant but does not provide alarms for course deviations or stopped shipments. Operators in the WIPP Central Monitoring Room had to observe the shipment's path on screen, recognize if a deviation had occurred and then respond, resulting in several miles of inadvertent travel on the wrong road in one case.

The Lab's Guardian system had already been developed to "reason," learning to track anomalies from an established transport route or a set pattern of behavior for personnel and material in nuclear material facilities. Adapting it to alert WIPP's monitoring staff was inexpensive and quickly achieved.

Guardian now links with the TRANSCOM satellite tracking system, and as soon as it recognizes a stop, communication failure or route deviation, it sounds alarms and posts message windows on the computer screens for the monitoring room operators. The new system was modified for WIPP within just weeks of the off-course truck incident, thanks to support from the Department of Energy's Albuquerque Operations Office for National Transportation Program.

"We realized that with our advanced surveillance experience, we could deploy a Guardian-based system to provide route assurance for WIPP quickly and effectively, and so far it's successfully tracked seven shipments," said project staff member Sharon Seitz of NIS-7.

Not only can Guardian keep track of the trucks, it has been used in the Lab's National High Magnetic Field Laboratory, where it is remotely monitoring a capacitor bank room. Guardian also is in place at the Lab's Applied Monitoring and Transparency Laboratory as part of a prototype system to monitor nuclear weapons dismantlement.

The Laboratory is working with DOE's National Transportation Program to implement an enhanced version for route assurance on all shipments tracked by TRANSCOM for DOE/NTPA.

# *Lab leads national accelerator program*

*by David Lyons*

The director of the Laboratory's new Advanced Accelerator Applications program says the program will address several important national challenges, including the safe transmutation of nuclear waste.

The Lab was recently named lead laboratory for the program, which will include participation from other Department of Energy laboratories, principally Argonne and Savannah River, private companies such as Burns and Roe Engineering International and General Atomics, and universities.

"We're looking forward to working closely with our DOE, private sector and university partners to ensure that the important goals of AAA are met and that they directly support areas of national need," said the program director, Edward D. Arthur.

"AAA targets the challenges the nation faces with addressing long-lived nuclear waste, rebuilding the national nuclear science infrastructure, restoring U.S. leadership in international nuclear affairs and meeting national security needs."

The goals of AAA over the next decade are threefold:

• to demonstrate the proof-of-performance and practicality of transmutation (the nuclear transformation of long-lived radioactive materials into short-lived or nonradioactive materials) in terms of meaningful impact on nuclear materials and waste management;

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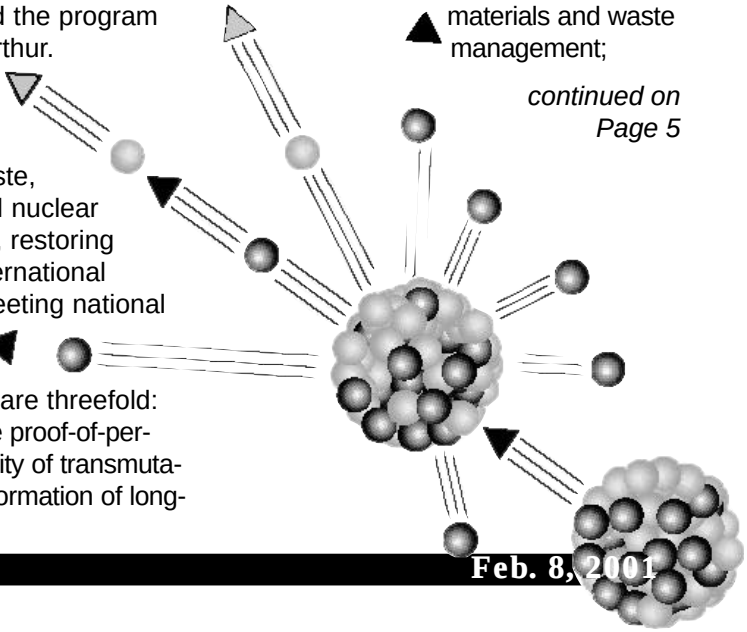

## Lab leads …

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• to define and execute activities designed to sustain the country's nuclear science and engineering infrastructure; and

• to continue technology development and demonstration applicable to a backup, accelerator-based tritium production capability, should national security needs dictate a need for this capability.

To meet these goals, the consortium plans to construct an accelerator-driven test facility, which also will function as a national nuclear science and engineering user facility. The program combines technology development and design efforts from the former Accelerator Production of Tritium and Accelerator Transmutation of Waste programs into a new effort with a broader purpose.

Arthur has been at Los Alamos since 1972, primarily working in technical and management areas pertaining to applied nuclear physics and nuclear science and technology. Most recently he served as the deputy program director for the Energy and Sustainable Systems Program Office. In that role, he shared responsibility for the overall development and management of energy and other civilian-technology-related programs at the Laboratory.

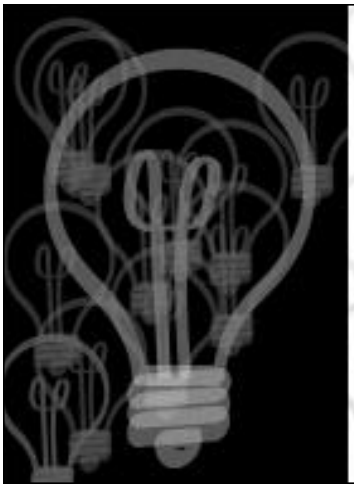
Arthur received his bachelor's degree from Tulane University and his doctorate in intermediate energy nuclear physics from the University of Virginia

## *Cash incentive …*

*continued from Page 2*

Managers with critical job openings that have been difficult to fill will undoubtedly welcome the prospect of a new recruitment tool. Referral incentives can be used at the discretion of the hiring official and are particularly useful in cases where there is documented difficulty recruiting applicants with the particular skills required.

Not all job openings are eligible for the Employee Referral Incentive program, and there are other criteria that must be met. For the details, visit the HR Web page at *http://www.hr.lanl.gov/Benefits/salarymanagement/EmployeeReferral.stm*.



## Science Day

**Tuesday, Feb. 13**
**8 a.m. through 5 p.m.**

*J. Robert Oppenheimer Study Center*
*Jemez/Cochiti Conference Rooms*

For more information and a complete agenda, go to *http://stb.lanl.gov/scienceday/index.html* on the World Wide Web.

## Benefits Buzz

### *UC approves new UCRP age factors*

The University of California Board of Regents recently approved changes to the retirement age factors for UC Retirement Plan members.

The university's Human Resources and Benefits Office recommended the changes to the retirement age factors in response to UC's need to remain market-competitive in total compensation and to enhance the university's ability to retain faculty and staff.

Following are the former and new age factors.

| Retirement Age | Former UCRP | New UCRP | Percent of Increase |
|---|---|---|---|
| 50 | 0.0109 | 0.0110 | 0.92% |
| 51 | 0.0116 | 0.0124 | 6.90% |
| 52 | 0.0122 | 0.0138 | 13.11% |
| 53 | 0.0130 | 0.0152 | 16.92% |
| 54 | 0.0138 | 0.0166 | 20.29% |
| 55 | 0.0150 | 0.0180 | 20.00% |
| 56 | 0.0162 | 0.0194 | 19.75% |
| 57 | 0.0177 | 0.0208 | 17.51% |
| 58 | 0.0195 | 0.0222 | 13.85% |
| 59 | 0.0216 | 0.0236 | 9.26% |
| 60 | 0.0241 | 0.0250 | 3.73% |
| 61 | 0.0241 | 0.0250 | 3.73% |
| 62 | 0.0241 | 0.0250 | 3.73% |
| 63 | 0.0241 | 0.0250 | 3.73% |
| 64 | 0.0241 | 0.0250 | 3.73% |
| 65 | 0.0241 | 0.0250 | 3.73% |

## Occupational Illness Initiative

The Department of Energy's program to compensate employees for illness resulting from job-related exposure to radiation and/or beryllium is called the Energy Employee Occupational Illness Initiative. Former Laboratory employees who wish to find out more about the program are advised to call Maureen Cadorette at (410) 955-4587 or send e-mail to *LANLFWMS@jhsph.edu*.

Information about the DOE program can be found at *http://www.eh.doe.gov/benefits/* on the Internet.


*Sue Sebring*

**Sue Sebring** of Procurement (BUS-5) is a member of the Procurement Evaluation and Re-engineering Team that won a Hammer Award recently from the Department of Energy. The team of federal and contractor procurement professionals from across the DOE complex was cited for cutting the cost and increasing the efficiency of procuring goods and services. Sebring, who joined the Lab 23 years ago, presently is a contract specialist who oversees the prime contract requirements pertaining to procurement. The Hammer Awards recognize those who have made significant contributions in support of reinventing government.


*Paul Lisowski*

**Paul Lisowski** is the new director of the Los Alamos Neutron Science Center (LANSCE), which produces intense beams of pulsed neutrons that support both defense and civilian research programs. Lisowski has served in a broad range of technical and managerial positions in his 23 years at the Laboratory. Since 1990, he has been group leader for Neutron and Nuclear Science, project director for the National Accelerator Production of Tritium Project and project director for the Lab's Advanced Hydrotest Facility.


*Grant Heiken*

Geologist **Grant Heiken** is the interim director of the Laboratory branch of the Institute for Geophysics and Planetary Physics. Heiken takes over from Charles "Chick" Keller, who is on sabbatical to the Scripps Institution of Oceanography in San Diego, Calif. IGPP was founded in 1946 at University of California-Los Angeles and comprises branches that later were added at other UC campuses and facilities. The Los Alamos branch was founded in 1980 to provide formal research connections between Lab scientists and students and faculty at UC. The selection of a permanent IGPP director is expected by late spring.


*Alan Picklesimer*

**Alan Picklesimer** of Experimental Programs (NW-EP) has been selected as program manager for munitions and materials in the Nuclear Weapons Directorate. He will be responsible for program planning and development, and managing the Department of Defense/Department of Energy joint munitions memorandum of understanding; high explosives science and engineering; properties and dynamic response of materials; and correlated diagnostic development. Picklesimer, who had been acting program manager, has extensive research experience in theoretical and applied physics, much of it related to weapons materials and physics.


*Craig Leasure*

**Craig Leasure** is the new program manager for directed stockpile work in the Materials and Manufacturing Program Office (NW-MM) of the Nuclear Weapons Directorate. Leasure, who has been at the Laboratory since 1990, will head a program that provides for refurbishment and maintenance of the nuclear weapons stockpile through the fabrication of War Reserve components. It also includes several stockpile surveillance activities such as surveillance of pits, detonators and heat sources. Leasure has held several line-management positions since joining the Lab and most recently was the program manager for manufacturing facilities in NW-MM.


*Edmund Miller*

Lab retiree **Edmund Miller** is a recipient of the Institute of Electrical and Electronics Engineers' Third Millennium Medal, which was awarded to about one percent of the IEEE membership last year. Miller, a life fellow of IEEE, retired in 1993 after more than four years as group leader of Sensor Systems and Robotics (MEE-3). He also worked for about 15 years at Lawrence Livermore National Laboratory. Miller, who earned a doctorate in electrical engineering from the University of Michigan, focused on computational electromagnetics and related areas at the Lab, and he has remained involved in the field since his retirement.


*Rhon Keinigs*

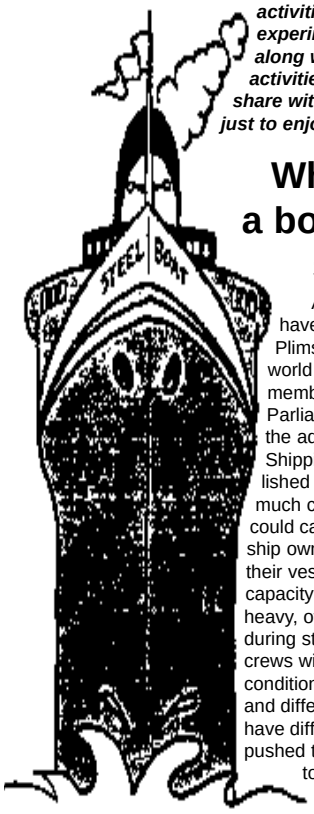
**Rhon Keinigs** of (X-1) has been appointed project leader for primary physics experiments in the Program Office for Materials Dynamics in the Nuclear Weapons Directorate. Keinigs, who will continue to serve as project leader for the Atlas pulsed-power program, joined the Lab in 1981 as a postdoc. He has been a staff member in the Applied Physics (X) Division since 1983. His primary area of research has been theoretical plasma physics; he also has worked in the areas of materials strength, fusion, high-power particle beam physics, advanced accelerators and plasma processing for the semi-conductor industry.

## *In Memoriam*

### Dan Ross

Lab retiree Dan C. Ross died Nov. 21, 2000. Ross was an electrical engineer who worked at Los Alamos from 1983 to 1990. He was 77.

***"Science at Home" is a publication developed by Science Education (STB-SE) to interest children, particularly those in grades four through eight, in science through hands-on activities. We are reprinting experiments from the book, along with other scientific activities, for employees to share with their families or just to enjoy themselves.***




## Why does a boat tote and still float?

Although many people have never heard of Samuel Plimsoll, sailors all over the world owe him thanks. As a member of the British Parliament in 1875, he forced the adoption of the Merchant Shipping Act, which established specific limits on how much cargo an individual ship could carry. Before this time, ship owners routinely loaded their vessels beyond a safe capacity and frequently these heavy, overloaded ships sank during storms at sea, taking their crews with them. Realizing that conditions often change at sea and differently shaped vessels have different limits, Plimsoll pushed the British government to require ship owners to paint a line on the side of their ships marking the maximum safe load limit. When cargo is loaded onto a ship, it settles lower into the water until the Plimsoll line on the hull reaches the water line. At that point, the ship is considered full and can't be loaded with any more cargo.

$D = m/v$

In this activity you will experiment by creating differently shaped boats and testing them in different types of water to see how the variables of heat, cold and salinity, or salt content, affect their ability to float.

### The stuff you'll need

A sink, dish pan or large bowl; at least a 5-inch stick of modeling clay per person; two or three dozen pennies or same-sized marbles; two trays of ice cubes; 1 1/2 cups salt; a pen; about one gallon of water; data sheet; and measuring cups.

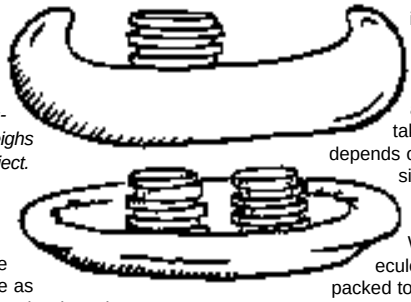
### Here's the plan

1. Fill the sink, dish pan or large bowl 2/3 full of water.

2. Make a ball of clay about the size of a golf ball. Gently release the ball onto the surface of the water. What happens to the ball and the water?

3. Give everyone in your family a ball of clay the same size as the ball in step 2. Form the clay into the shape of a boat or canoe. Gently place the boats onto the surface of the water. What happens? If your boat sinks, modify the shape until it floats.

☞ *To float things that normally sink in water, you must spread their weight over a greater area. So, flattening the clay will make it float. That's why large cargo ships and oil tankers are very wide and flat. By spreading out the weight, these ships are able to displace much more water. An object floats when the water it displaces or pushes aside weighs exactly as much as the object.*

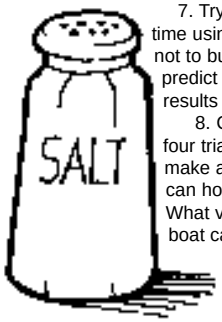


4. Have each person predict which boat will hold the most marbles or pennies before it sinks. Write the predictions on the data sheet. Record the water type as "room temperature, fresh water" on the data sheet. After placing a boat in the water, add one marble or penny at a time until the boat sinks. Record how many marbles or pennies the boat held before it sank. Test and record for each boat. Which boat held the most marbles? What happened to the water level against the side of the boat as you added more objects?

Once you establish the load limit of each boat in room temperature, fresh water, don't change the boats. At this point, these boats are serving as controls for the rest of the experiments. If they are changed, the results will not be valid.

5. After testing all of the boats, add two trays of ice cubes to the water. Wait five minutes for the water to cool down. While waiting, have everyone predict how many marbles or pennies each boat will hold in ice water. Record the type of water as "fresh ice water" on the data sheet. Repeat the experiment and compare the results to the previous results. What are the differences?

6. Try the experiment again using salt water. Add 1 1/2 cups of salt for approximately every quart of water. Mix well. The salt will not entirely dissolve, but you should stir it frequently. Record your predictions for how many marbles or pennies the boat will hold while floating in salt water. Compare these results to your previous results. What are the differences?




7. Try the experiment one more time using hot tap water. Be careful not to burn yourself. Remember to predict and record. How did the results differ from the others?

8. Compare the results from all four trials. What conclusions can you make about how much weight a boat can hold in different types of water? What variables change how much a boat can tote?

### Wrap-up

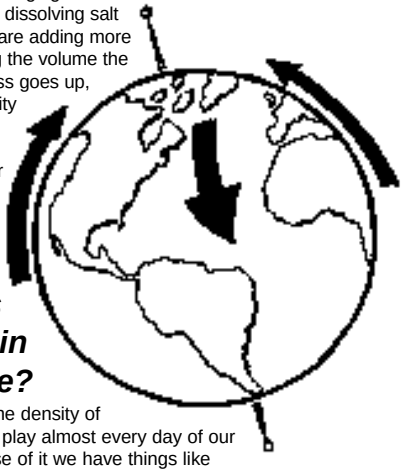
As the conditions in the water change, so does a boat's ability to float. In general, the colder the water, the higher a boat floats, the warmer the water, the lower it floats. Increasing the salinity of the water also makes a boat float higher.

### What's going on here?

The reason large ships can carry so much cargo is the interaction of buoyancy and density. The concept of buoyancy goes back to ancient Greece when Archimedes, a famous philosopher, discovered that the more space an object takes up in water, the easier it is to float. As an object pushes down on water, it displaces or pushes some of the water aside. If it can displace enough water to equal its own weight, then it will float. By flattening out the clay, you are making it displace more water, so it becomes more buoyant and floats. This concept is called the Archimedes' principle in his honor.

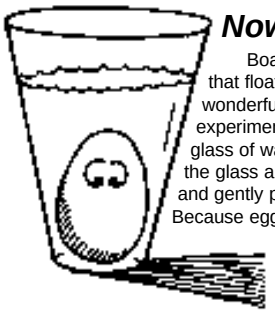
Some materials, like wood, float in water no matter what shape they are. While buoyancy is still a factor, a piece of wood floats because of a property of matter called density. Density is a measure of how much stuff is packed into how much space. It can be described by the formula Density = Mass/Volume. Volume is the amount of space an object takes up. While buoyancy depends on the shape of an object, density is controlled by the way the individual molecules in that object are packed together. With a few exceptions, the molecules in a piece of wood are packed together in a less dense fashion than the molecules in water or clay, so wood normally floats regardless of its shape. The molecules in a piece of steel, on the other hand, are more dense than water, so ship builders must spread the weight over a large surface area if they want to make a steel boat float.

The density of any type of matter can be changed by changing its temperature. In general, when you heat something up, the molecules in it spread out, increasing the total volume. We say the object expands. Looking at the density formula, if you increase the volume and keep the mass the same, the density decreases. Because hot water becomes less dense, it can support less weight over the same area than cold water. Another way of changing the density of water is by dissolving salt into it. Here, you are adding more mass but keeping the volume the same. As the mass goes up, so does the density of the water so a boat can hold more in salt water than it can in fresh water.



### Where does this happen in real life?

Changes in the density of matter come into play almost every day of our lives, and because of it we have things like weather. When air gets hot, it expands and becomes less dense. As a result, warm air rises and cool air sinks producing wind. In the oceans, changes in water density caused by heating, cooling and salinity help to drive currents. Cold dense water from the Arctic and Antarctic oceans pushes down from the poles toward the equator, forcing the warmer water up and out of the way. This up-welling of water provides much of the nutrients to the fish that feed millions of people.



### Now try this

Boats aren't the only things that float in water. You can try a wonderfully egg-citing density experiment using a raw egg, a tall glass of water and some salt. Fill the glass about 3/4 full with water and gently place the egg in. Because eggs are slightly more dense than water, the egg will sink. Carefully stir the salt into the water without breaking the egg. After a few seconds you should start to see the egg mysteriously rise. Magic, you say? No, density.

# Coke n' snorkel

*by John Bass*

"Did you have a good vacation?"

There's a question everybody asks when you get back. But after I got back last December from a week on the Caribbean island of St. Croix, the question left a confused smile on my face.

My wife, Phyllis, and I wanted to vacation somewhere exotic, far away from the snow, with sun and crystal clear water lapping palm-lined beaches caressed by warm tropical breezes. That's the way it was until the last day.

After a few hours of snorkeling, our boatload of 40 tourists stopped at an island just off St. Croix to enjoy some beach time. Phyllis stayed on the boat while I went ashore.

After a short stroll, I saw a group from the boat ahead of me looking at something on the beach. As I got closer, they started to walk on with a palms-up "I don't know" type gesture.

As I got up to where they had been, I saw a big white plastic bag with a hole in one side. Two rectangular gray plastic-looking packages lay next to the hole. As a former reporter, I had seen packages like that before. "Nooo, couldn't be," I thought.

The corner of one package was torn open with black plastic sticking out from the hole. I spread apart the plastic and looked in and saw a wet, white powder stained brown from lying on the wet beach. "Nooo, wait a minute, this can't be what I think it is."

I thought about giving it the test. I could take a small sample, put it on my tongue and see if it went numb. But I wasn't too keen about trying that with something that had been lying on a beach after floating in the ocean.

I saw more gray packages, a lot more, in the bag. Twenty-eight years as a TV newsman and here I for the first time was with a big bale of drugs — almost certainly cocaine bricks — without police anywhere in sight.

I started to walk away, but stopped and went back. I couldn't leave hundreds of thousands of dollars (at least) of illegal drugs just lying on the beach. About this time a man and his wife from the boat walked up. "What's this?" he said.

"I think it's drugs … cocaine, dropped by a runner. The bale floated ashore," I said.

He kneeled down and picked up the torn package and promptly stuck his finger in the hole, dug out a small sample and dabbed it on his tongue.

"Oh yeah!" he said, his eyes opening wide.

"We can't just leave this stuff on the beach," I said.

"I agree," and he put down the package.

"We'd be disturbing the scene, but it washed up and this is something I don't think you just leave lying around," I said. "Let's carry it back to the boat and take it back to St. Croix and have the crew call the police."

As we lugged the bale — which I figured was a good 100 pounds — back to the boat, others wondered what we were up to. "I thought you guys were bringing back a dead body or something," said my wife.

***Above: The bale of cocaine bricks, foreground, is floated back to the boat with the help of several passengers, including John Bass of Public Affairs, the second person above and right of the bale. Right: The captain of the boat holds up one brick of cocaine to show the rest of the passengers.*** *Photos by Phyllis Bass*

Everyone crowded around the bags, and the captain held one brick up high. "This has a street value of $20,000," he said.

"How does he know that?" I wondered.

When we got back, the island police and Drug Enforcement Administration were waiting for us. I spent several minutes telling them what happened.

Afterwards, I found my wife standing on the wharf with a young woman. "Hello, Mr. Bass, I'm Catherine Fahy with the St. Croix Daily News." Media! So I told the story again.

That completed, my wife and I went to a restaurant around the corner for lunch and drinks known locally as painkillers. My wife had a thought. "Do you think there's a problem for our names to be in the paper?" she asked.

"From whom?"

"You know, the drug runners who lost the stuff."

I assured her I was just the dumb tourist who hauled it off the beach, not the employee of the organization that dumped it in the ocean.

She was quiet for several moments, then lightly laughed. "Yeah, Bass, you do show a girl a good time."

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