

### Multiple C-sections not a labor waiver

Even a history of multiple cesarean sections need not exclude a pregnant woman from attempting a vaginal delivery, new research indicates. The findings lend support to a growing number of women and physicians who believe the number of cesarean sections in the United States is unnecessarily high.

In recent years, vaginal delivery after one previous cesarean section has become an accepted option, sanctioned under certain conditions by the American College of Obstetricians and Gynecologists. But physicians remain divided over the safety of normal labor and vaginal delivery in patients with a history of multiple C-sections, fearing an increased risk of uterine rupture or serious scar separation.

Kathleen M. Pruett and fellow physicians at the Baylor College of Medicine in Houston followed 55 women with a history of multiple cesareans attempting vaginal delivery. Of the 51 women with two previous cesareans, 23 (45 percent) had successful vaginal deliveries, they report in the August *OBSTETRICS AND GYNECOLOGY*. Of the four women with histories of three cesareans, two delivered vaginally. There were no serious uterine ruptures and no deaths; three of the 25 women who delivered vaginally experienced reparable, asymptomatic scar separations.

Previous studies have shown even higher rates of successful vaginal deliveries — ranging from 58 to 81 percent — among women with similar histories. The latest study was unusual, however, in that it included 42 women for whom no information was available regarding the nature of their previous uterine incisions. Most trials have accepted only women with a history of low cervical transverse incisions, considered less likely to rupture than vertical incisions.

### Tapwater humidity: Don't breath the air

High-tech home humidifiers that use ultrasonic waves to create a fine mist, raising relative humidity, are gaining popularity because they are quiet and efficient. But a new study indicates that, when used with tapwater, they may lower indoor air quality to dangerous levels.

V. Ross Highsmith and his co-workers tested indoor particle concentrations associated with use of a variety of home humidifiers using tapwater of average hardness and total dissolved solids. Within 24 hours, the ultrasonic devices filled a test room to a concentration in excess of 6,300 micrograms of fine mineral particles per cubic meter of air — more than 40 times the recommended limit for respirable particulate matter set by the Environmental Protection Agency. Traditional “impeller” humidifiers generated less than one-third the amount of aerosol particulates; steam units generated no measurable increase in airborne particulates.

Until now, the researchers say, scientists believed that particulates emitted from humidifiers were too large to remain airborne, and so were not a potential health problem. But the new findings show otherwise, and suggest that “the particulate-induced discomfort to individuals with respiratory problems such as asthma may completely offset the benefits of the higher humidity levels.” Manufacturers recommend owners use distilled or demineralized water in the devices, the authors write in the August *ENVIRONMENTAL SCIENCE AND TECHNOLOGY*, but “most homeowners appear to be ignoring these warnings.”

The researchers say the overall health impact of humidifiers depends largely on the quality of water used. They conclude that 90 percent of total water-dissolved compounds — including lead, aluminum and asbestos — may be spewed by ultrasonic humidifiers as fine, respirable particulates, and may result in chronic respiratory problems.

Highsmith is affiliated with the EPA's Environmental Monitoring Systems Laboratory in Research Triangle Park, N.C.

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### Ancient-air idea may not hold water

Several independent teams of chemists are questioning promising claims made last year that amber — a fossilized resin from trees — can preserve samples of air from the age of the dinosaurs and even farther in the past. Backed by experimental evidence, these researchers assert in the Aug. 5 *SCIENCE* that amber is permeable to gases and therefore cannot contain air for millions of years.

The term amber refers to a variety of chemically different resins excreted by certain species of coniferous trees. Before it hardens, the sticky resin can trap insects and larger animals such as frogs — a property exploited by paleontologists who study the preserved animals (SN: 9/26/87, p.205).

Last year Robert A. Berner from Yale University and Gary P. Landis from the U.S. Geological Survey in Denver reported they had analyzed gas released by crushing amber samples to determine the oxygen content of the atmosphere from the time the resin oozed out of its tree. Amber from the Cretaceous period, approximately 85 million years old, indicated that oxygen made up 30 percent of the air during the age of the dinosaurs as compared with 21 percent of today's atmosphere, they concluded (SN: 11/7/87, p.293). Berner and Landis asserted that bubbles within the amber samples had trapped and preserved the air, providing scientists with a unique way of analyzing the atmosphere from millions of years ago.

Several months later, Harmon Craig and Yoshio Horibe of the Scripps Institute of Oceanography in La Jolla, Calif., reported that their experiments indicated that while amber did indeed preserve ancient gases, these gases could not be viewed as representative of what was in the atmosphere (SN: 1/2/88, p.8).

Leading off the technical comments in *SCIENCE*, Harold B. Hopfenberg, a chemical engineer at North Carolina State University in Raleigh, and his colleagues report that their experiments demonstrate amber cannot trap air. Hopfenberg found amber readily absorbs propane, a molecule much larger than oxygen or nitrogen, the principal components of air. This means air can pass through amber's amorphous resin matrix, which resembles the plastics used as containers of carbonated beverages, Hopfenberg says. As an example of this kind of diffusion, he points out that bottles of unopened soda lose their fizz after a while on the shelf.

In a reversal of their former position, Horibe and Craig also report that air diffuses into amber and that any gas in amber cannot be as old as claimed by Berner and Landis. Amber chemist Curt W. Beck from Vassar College in Poughkeepsie, N.Y., writes that whether or not amber is permeable, the resin will react with any enclosed gas and will therefore alter it, a process dismissed by Berner and Landis.

In their response, Berner and Landis claim amber is much less permeable than the critics contend. They suggest that since Hopfenberg was analyzing microscopic chips of amber, the results of the diffusion experiment may not be reliable. While they are planning a different experiment to measure the permeability of amber, Landis says he is “90 percent certain” amber can preserve ancient air and provide information about oxygen levels through geologic time.

### U.S. scientists working in Soviet water

For the first time in 10 years, the Soviet Union has granted a U.S. research vessel permission to enter the Soviet Exclusive Economic Zone (EEZ) — a 200-mile-wide border around Soviet coastlines. The research ship *Thomas Washington* from the Scripps Institute of Oceanography in La Jolla, Calif., is spending three weeks in the region between the Aleutian Islands and the Kamchatka Peninsula and will be operating in both the Soviet and U.S. EEZs as well as in international waters. Two Soviet geoscientists have joined the research crew for this voyage.

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