

ozone in a layer between 12 and 23 kilometers in altitude.

Although winds from the north replenish the lost Antarctic ozone in November and December, the ozone hole's growth each year may be contributing to a general thinning of the global ozone layer, which satellite and ground-based instruments have detected over the past decade. Ozone blocks out harmful ultraviolet radiation from the sun, and scientists say the weakening of this shield will increase the risk of skin cancer in humans and will harm animals and plants.

On Oct. 6, the concentration of ozone over parts of Antarctica dropped to 110 Dobson units, beating a record of 121 Dobson units, set in 1987, says NASA's Arlin Krueger. The measurements were made by the Total Ozone Mapping Spectrometer on board the Nimbus-7 satellite. Normally, ozone levels for this time of year would be about 225 Dobson units, Krueger says.

This year's ozone depletion signals a clear departure from a pattern established in the 1980s, when severe ozone holes developed only on odd-numbered years. Weaker ozone holes appeared on the alternate years because the polar atmosphere turned more turbulent than normal, allowing warm winds from the north to penetrate into the polar region. In contrast, severe ozone loss occurred when the Antarctic atmosphere remained stable and cold during winter. After two strong ozone holes in 1989 and 1990, some scientists thought 1991 might bring a weaker hole, but the atmosphere remained cold and stable.

Jackman speculates that the intense ozone loss of the last few years may account for the development of a major depletion this year. Such a feedback could occur because ozone destruction helps maintain the cold polar temperatures needed to form the ozone hole. Normally, when sunlight returns to Antarctica in the springtime, ozone in the polar stratosphere absorbs the light and warms the upper atmosphere. But when half the ozone has disappeared from the polar region, the stratosphere stays much colder than normal even into the next year — a condition that could lead to severe ozone loss year after year, Jackman says.

"I don't think it's a good indication for ozone in general," he adds.

Balloon measurements made at the South Pole reveal an unusual character in this year's ozone depletion, one not seen in previous years, says Samuel J. Oltmans of the National Oceanic and Atmospheric Administration in Boulder, Colo. Along with the familiar pattern of loss in the lower stratosphere, ozone also disappeared from a layer between 27 and 29 km in altitude. The significance of the upper thinning remains unclear, says Oltmans, who is now attempting to determine when it first appeared. — R. Monastersky

Sex abuse: Direct approach may aid recall

A new study suggests that sexually abused children may best remember whether their genital area had been touched by an adult if asked directly about such experiences with the help of an anatomically detailed doll. Moreover, children show considerable resistance to the types of misleading questions that may inadvertently crop up in sexual abuse investigations, maintain psychologist Karen J. Saywitz of Harbor-University of California, Los Angeles Medical Center in Torrance and her colleagues.

Their study, published in the October *JOURNAL OF CONSULTING AND CLINICAL PSYCHOLOGY*, represents a rare attempt to develop guidelines for obtaining information about sexual abuse from children, based on an analysis of youngsters' memories for a real-life situation — genital touching by a pediatrician during a routine medical exam.

Such instances differ considerably from actual cases of child sexual abuse, caution Saywitz and her co-workers. In addition, questions about sexual abuse usually occur within repeated clinical interviews and stressful cross-examinations in the courtroom. Nevertheless, these data suggest that mental health clinicians and lawyers should not resort to direct questions about specific forms of abuse only as a last measure in sex abuse cases involving children, they contend.

"Our results indicate that although there is a risk of increased [memory] error with doll-aided direct questions, there is an even greater risk that not asking about [genital] touch leaves the majority of such touch unreported," the researchers conclude.

In actual sexual abuse evaluations, police officers or lawyers often first ask children general questions about what happened, then give them anatomically detailed dolls or other props to act out the incident, and finally ask specific — and sometimes misleading — questions about genital touching and sexual behavior.

Saywitz's group studied 72 girls, half of them 5 years old and half age 7. In each age group, half the girls received a standard medical check-up conducted by a female pediatrician with their mothers present, including a vaginal and anal examination. The remaining girls underwent the same procedure without vaginal or anal touching. Either one week or one month later, experimenters asked half of each group to report what the physician did to them through free recall of the visit, with demonstrations using an anatomically detailed doll, and in response to direct and misleading questions.

Only eight of 36 children who underwent the genital exam remembered vaginal touching through free recall and six through doll demonstrations; four children correctly reported anal touch in free

recall and in demonstrations. No children in the untouched group recalled or demonstrated that genital touch had occurred.

In contrast, 31 girls who received a genital exam disclosed vaginal touch in response to an interviewer's direct question accompanied by pointing to the doll's vaginal area. When asked direct questions, 25 girls in the same group reported anal touch. One child in the other group falsely reported vaginal touch under direct questioning, and two youngsters falsely reported anal touch.

Older children displayed better memory after one week than their younger counterparts, but this difference disappeared after one month.

Children made few errors in response to misleading questions (such as "How many times did the doctor kiss you?"), but younger children showed a greater tendency to err when misled.

Children's reports of when the exam occurred and the pediatrician's age and height achieved greater accuracy when the interviewer used age-appropriate questions, such as "Is the doctor old enough to be a mommy?" — B. Bower

Nuclear waste delayed

The Department of Energy last week temporarily delayed shipments to the nation's first permanent repository for nuclear waste, thus avoiding an immediate showdown with the state of New Mexico, where the underground facility is located.

Energy secretary James D. Watkins had announced in early October that the \$1 billion facility was ready to open and informed the state that initial shipments could arrive by October 10 (SN: 10/12/91, p.228). The day before that deadline, New Mexico filed suit in federal court, seeking to temporarily block shipments until Congress could pass a pending bill that specifies limits on the amount of waste the repository can store during a six-year testing phase. As New Mexico filed its suit, DOE decided to delay the initial shipments until a federal judge can rule on the state's case. Judge John G. Penn of the U.S. District Court for the District of Columbia scheduled a hearing for Nov. 15.

Located 653 meters below the desert surface near Carlsbad, the repository will hold radioactively contaminated waste, generated during the production of nuclear weapons. After completing the testing phase, the Energy Department must show the facility meets federal environmental regulations before filling the repository with 850,000 55-gallon drums of waste. □