

SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication
Volume 141, No. 1, January 4, 1992

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SCIENCE NEWS (ISSN 0036-8423) is published weekly on Saturday, except the last week in December, for \$39.50 for 1 year or \$68.00 for 2 years (foreign postage \$6.00 additional per year) by Science Service, Inc., 1719 N Street, N.W., Washington, DC 20036. Second-class postage paid at Washington, DC, and additional mailing office. **POSTMASTER:** Send address changes to SCIENCE NEWS, 231 West Center Street, Marion, OH 43305. Change of address: Four to six weeks' notice is required — old and new addresses, including zip codes, must be provided.

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Editorial and Business Offices:
1719 N St., N.W., Washington, DC 20036
(202-785-2255)

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Subscription Department:
231 West Center Street, Marion, OH 43305
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Letters

More on NORM

As a Louisiana petroleum geologist, I read with interest "NORM: The New Hot Wastes" (SN: 10/26/91, p.264). I believe a few points need to be clarified concerning naturally occurring radioactive materials (NORM) generated by the oil and gas industry.

While your article several times mentioned *drilling* operations as producing NORM-clogged pipe, etc., it is in fact only certain *production* operations that result in large accumulations of NORM. During drilling, very little native fluid is allowed to enter a wellbore. It is only after oil and gas are found and production begins that NORM-containing brine can enter production pipes and equipment.

With regard to the reported lack of understanding by regulators as to the relationship of reservoir rock type or extraction technique to NORM accumulation, there in fact exist certain basic relationships. NORM-tainted pipe scale is produced through precipitation of dissolved

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Cover: This computer-generated scene from a student-created "virtual world" shows the visual backdrop against which a participant interacts with graphic objects on the screen. Researchers worldwide are investigating the potential of virtual-reality technology for applications in entertainment, training, scientific visualization, design and manufacturing. (Image: Human Interface Technology Laboratory, University of Washington)



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solids from brine as temperature and pressure decrease when brines flow to the surface. In oil or gas reservoirs that yield little or no brine during production, little or no NORM is generated. Also, since older, deeper (and consequently hotter) reservoirs have undergone greater diagenetic alteration, brines produced from these reservoirs usually contain much higher concentrations of NORM-producing ions. Thus, extraction techniques that eliminate or reduce brine production, or that preferentially produce from shallow reservoirs, will greatly decrease or eliminate NORM accumulation.

*Robert Gerdes
Mandeville, La.*

Thanks to Janet Raloff's story on NORM — the embarrassing radiological wastes discovered by oil and gas pipeline and drilling companies — I hereby disclose an even more embarrassing NORM, discovered quite by accident here in Coronado, Calif.

It seems that the gas log fireplace in my 20-year-old home is emitting gamma rays at three

to four times our normal Coronado background, which I have measured as an average of 20 microroentgens per hour for the past six years. Thus, at 60 to 80 microroentgens per hour, my fireplace would require a license in many states and exceeds the level at which the nearby San Onofre power plant must report an "Unusual Incident" to the Nuclear Regulatory Commission (57 microroentgens per hour).

Our local San Diego Gas and Electric Company denies previous knowledge of this phenomenon, and has measured radiation from gas holders, including liquefied natural gas, without results. Thus it would appear that the firebrick in fireplaces similar to mine has absorbed radium-226 and -228, gradually building up to a significant source.

I have found similar levels in five other older homes in my area but none in new homes with unexposed firebrick. Also, gas furnaces and water heaters in the same homes show no radiation above background levels, indicating again that the firebrick is the concentrator.

*Archie P. Kelley
Coronado, Calif.*

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