SAFETY LIGHT CORPORATION
4150-A OLD BERWICK ROAD, BLOOMSBURG, PA 17815
717-784-4344 TWX 510-655-2634

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5 October 1981

1981 OCT 13 AM 1:

Division of Fuel Cycle &
Material Safety
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ATTN: Mr. Paul Guinn, Materials Licensing Branch

RE: USNRC Licenses Nos. 37-00030-02 and 37-00030-08.

Dear Sir:

Reference is made to the proposed Environmental Monitoring Programs for Past Operations (License No. 37-00030-02) and for Current Production Activity (License No. 37-00030-08), submitted for review, comments and approval with our letters dated 4 March 1981, and 19 September 1980, respectively.

This is to advise you that, rather than await the results of your review of our proposals, in April of this year we initiated work on the majority of the items listed in our proposals, with the exception of those involving sampling and analysis of vegetation, soil, animals, fish, and river sediment. We have deferred work on this phase of the program until the results of the Oak Ridge Associated Universities (ORAU) Environmental Monitoring, conducted this past summer on our site and environs, became available for review; with these data, we feel that we shall be better able to select the most meaningful sampling sites, and then modify our proposed program accordingly.

We also wish to advise as follows:

1. Since April 1st of this year, we have been utilizing the analytical services of Northern Environmental Services Division, NUS Corporation, Rockville, MD. This change was made in order to obtain a shorter turnaround time for sample analysis than previously.

2. With respect to the Rn^{222} monitoring program shown under Table 3 of the "Proposed Environmental Monitoring Program for Past Operations", as submitted on 4 March 1981, we have extended this to include the use of the "Track Etch" Rn^{222} monitoring system, as provided by Terradix Corporation, Walnut Creek, CA. A copy of their brochure describing this system is enclosed for your information. In July 1981, we

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SAFETY LIGHT CORPORATION

installed the first set of these sampling units in various locations; these will be replaced with fresh samplers quarterly over the next year. We are currently awaiting the results for the first set of exposed samplers which were sent to Terradex Corporation at the end of last month.

By way of providing you with a brief update, our analysis of the environmental monitoring data obtained thus far this year under the above two programs shows no apparent evidence of any trends indicative of significant increase in the levels of radioactivity over those found in the past at the various on-site and off-site sampling locations investigated. Pertinent data are, of course, being kept on file for review, as required, by representatives of the Region I Office of USNRC.

As indicated previously, in the event that the upcoming ORAU sampling data indicate that more meaningful sampling locations should be selected, other than those listed in our earlier proposals, we shall take action accordingly, and advise you of any revisions involved.

Meanwhile, we would appreciate receiving your comments and suggestions as regards the information we have submitted thus far.

Yours very truly,
SAFETY LIGHT CORPORATION

Jack Miller
President

JTM:cwl

enclosures

cc: Mr. John D. Kinneman, Chief
Materials Radiological Protection Section, Region I
U.S. Nuclear Regulatory Commission

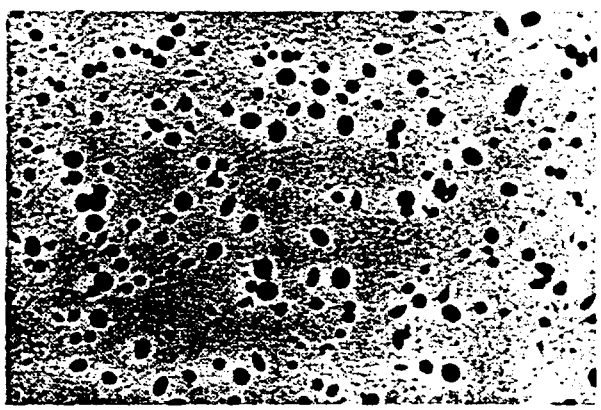
TERR - DEX

ENVIRONMENTAL MONITORING FOR RADON AND RADON DAUGHTERS

HOW TRACK ETCH WORKS

The TRACK ETCH method uses a special dielectric detector sensitive only to alpha radiation, such as that emitted by radon and its alpha-radioactive daughters. Each alpha particle reaching the detector produces a tiny radiation-damage track that is retained by the detector. An etching technique makes the tracks visible so that they can be counted automatically. The number of tracks per unit area is directly proportional to the integrated alpha exposure from the radon and its daughters to which the detector was exposed.

After it is processed, the detector constitutes a permanent record of the exposure. It can be reread at any time for verification, or a larger area of the detector can be read to increase sensitivity.



Alpha tracks on an Improved-Type TRACK ETCH detector.

SPECIAL FEATURES OF TRACK ETCH

- Uniquely provides a time-integrated exposure reading of the highly variable radon level. Integrating times of a year or more are possible.
- Sensitive only to alpha emitters. Cannot respond to other radiation such as light, x-rays, beta particles, or gamma rays.
- Simple, passive, with no moving parts.
- Low cost compared to any other techniques.
- Rugged for tough mining and outdoor environments.
- Sensitive enough to measure outdoor radon background. Sufficient range to measure highest mine radon environments.
- Can be used in radon only mode or total alpha activity mode.
- Provides a permanent record of exposure.
- No lower temperature limit.
- Temperatures up to 70°C (160°F) acceptable.
- No humidity limitations; no dessicants needed.
- No batteries, no electric supply needed.
- Negligible size and weight.
- Daughter only mode (working level) under development.

FOR MORE INFORMATION, PLEASE CONTACT

TERRADEX

Terradex Corporation
460 N. Wiget Lane
Walnut Creek, California 94598
Telephone: (415) 938-2545
Telex: 337-793

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TRACK ETCH®

FOR ENVIRONMENTAL MONITORING*

Terradex Corporation's TRACK ETCH technology to measure radon levels has been widely used for years as an effective tool in uranium exploration. Many hundreds of thousands of radon soil gas measurements have been made using TRACK ETCH in a wide variety of rough field environments. In the course of this work, Terradex has developed several new and important improvements to the basic TRACK ETCH process.

New developments by Terradex have greatly increased the sensitivity of the TRACK ETCH detector, permitting radon-only measurements using membrane and filter technology. Processing and reading improvements have also reduced costs. In addition, major calibration programs have defined sensitivity and statistics so that TRACK ETCH can be reliably applied. Development is in progress on devices to measure only radon daughters (working level values).

The improved TRACK ETCH systems are now being used to determine radon levels in homes and other buildings and to support the safety and environmental needs of the uranium industry at uranium mine and mill sites. Results from these programs have demonstrated the value of a completely passive device that can integrate the highly variable radon values over periods of months to a year.

*TRACK ETCH techniques are covered by worldwide patents of the Terradex Corporation. TRACK ETCH is a registered trademark.

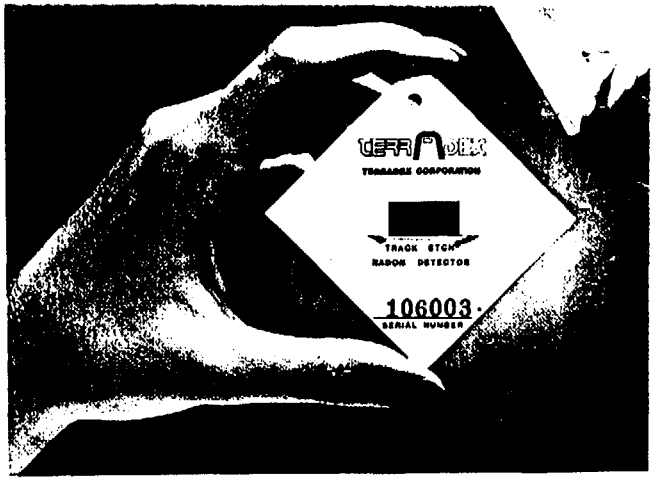
DEVELOPMENTS IMPORTANT TO ENVIRONMENTAL WORK

Recent enhancements of the TRACK ETCH system add greatly to its value in environmental monitoring. Compared to older systems, improved TRACK ETCH detectors are 5 to 10 times more sensitive to alpha particles and have superior resistance to hot and humid environments. Their optical properties permit automated counting, hence lower processing costs and higher accuracy. They are able to overcome the major problems of variability in radon levels as measured by conventional sampling or short-integrating-time devices; thus new TRACK ETCH detectors can easily integrate the radon exposure over a period of a few days to a year or more if necessary.

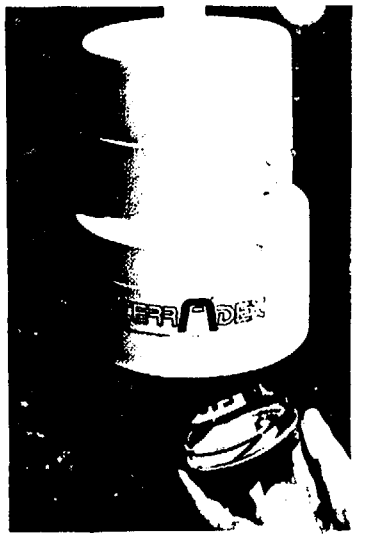
A variety of configurations are now available for detector mounting (see photographs). These detectors and configurations have been calibrated in standard U.S. Government radon chambers so that results can be reported in terms of picocuries/liter, working level values, or other appropriate units. This work also yields sensitivity limits and error statistics. For example, an exposure of 2 (pCi/l)-months (roughly equivalent to 0.01WL-month) can be measured to a standard deviation of 30%. Other configurations, now under development, measure radon daughters only (working level) and may be adaptable to area monitoring and personnel dosimetry.

SOME ENVIRONMENTAL APPLICATIONS

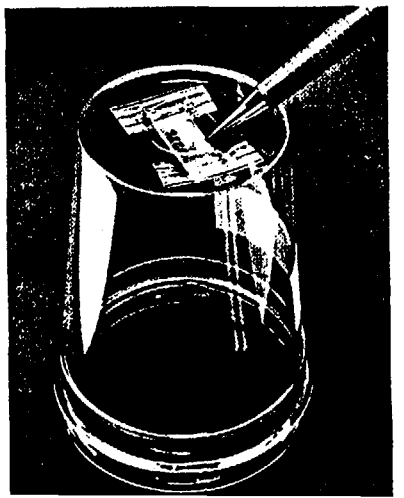
- Time-integrating, passive systems for continuous area monitoring around mines, mills, processing plants, or tailings piles.
- Personnel dosimetry for the miner by means of a rugged, small, light and passive device having no electrical or moving parts.
- Monitoring of homes and buildings under abnormal conditions; for example, mining towns or construction over radioactive ground or with radioactive construction materials.
- Monitoring of homes and buildings under normal conditions to locate abnormally high indoor radon levels resulting from poor ventilation or local soil or water conditions.
- Preoperational environmental studies around potential mine or mill sites.



Type B TRACK ETCH detector for indoor monitoring.



Type F TRACK ETCH detector cup being inserted in a Terradex cannister for outdoor monitoring.



Type C TRACK ETCH detector cup showing detector element.

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