

OVERVIEW OF THE NATIONAL ENFORCEMENT  
INVESTIGATIONS CENTER  
Denver, Colorado  
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This report has been reviewed by the Environmental Measurements Committee of the Science Advisory Board and is hereby transmitted to the Executive Board. It has not been reviewed by the Environmental Protection Agency and it should not be construed to represent Agency views or policy.

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SCIENCE ADVISORY BOARD  
U. S. ENVIRONMENTAL PROTECTION AGENCY

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## BACKGROUND AND SCOPE

The Environmental Measurements Committee has as one of its functions the overview of certain types of facilities of the Environmental Protection Agency. Upon completion of a visit to a particular point of operation, the Committee prepares a written report which, after draft revisions, is submitted to the Administrator through the Science Advisory Board.

In its brief history, the present Committee has visited Environmental Monitoring Systems Laboratories (EMSLs) and/or facilities associated with specific aspects of their operations. This was its first view of an enforcement facility. However, this transition from review of laboratories to review of enforcement facilities caused no problem because so many of the principles and laboratory usages, which are part of the policies of EMSLs, are included within the scope of the National Enforcement Investigations Center (NEIC). Indeed, NEIC has an implied dependence on the development of the technologies of systems laboratories.

Generally, it has been the practice of the Committee to spend two to three days at the object facility, during which time Committee Members listen to staff presentations of operations, visit the laboratories, and present an oral critique to the staff. The Committee has attempted to make such visits a true overview covering administration, execution of policy, and laboratory particulars.

The Committee visited with NEIC on December 9 and 10, 1980 and carried out the functions noted above. These were public meetings which had been previously announced, in accordance with regulations, in the Federal Register. Attached is a copy of the agenda of this meeting. (Appendix A).

#### COMMENTS AND RECOMMENDATIONS

##### Administration and Management

Among all of the facilities of EPA which the Committee has seen, NEIC is outstanding. The NEIC staff has a clear concept of its mission and a willingness to accept responsibilities, make decisions, and accept the consequences. The management operates effectively with EPA headquarters, regional, and field offices. Faced with the same bureaucratic problems as other offices with similar spectra of tasks and intensity of pressures, NEIC "manages" to come through with applicable plans of action.

Nevertheless, it is important to set the tasks of the facility in perspective, since in several aspects it differs from the other facilities visited. Among these differences are the following:

- The identifiably singular purpose of NEIC to enforce the **regulations**;
- The spirit generated among the personnel by this purpose;
- More easily justifiable resource requirements;
- The fact that other sections of government and EPA come to NEIC for assistance;
- Accommodation and ultimate satisfaction of legal necessities imposed upon the Agency.

Such factors bolster the leadership and the sense of mission, resulting in a strong positive effect on NEIC personnel. NEIC personnel are also in constant communication with the upper levels of NEIC administration -- which includes a salutary discussion between scientific and legal staff. The manner in which this communication is activated results in a degree of feedback from bench level to administration that enhances the quality and speed of operations.

1. In view of the positive aspects of this form of management and the experience of NEIC, it is recommended that all new employees of EPA receive training regarding responsibilities, method of operations, and potentialities of becoming involved in legal proceedings. If conducted by NEIC, these would serve to increase levels of performance, promote efficiency, and heighten public awareness. For current Agency employees, seminars could be designed and given at each major facility.
2. At NEIC itself, workshops could be designed for strategic planning. These would deal with model or classical problems and would include cooperation with research laboratories for anticipated methodology. The Science Advisory Board should also be kept apprised of these operations and be invited to participate as appropriate.

### Policy Execution

3. In designing regulations, it is apparent to the Committee that persons responsible for drafting regulations may not know nor understand enforcement procedures. Since every program office writes regulations, it is strongly recommended that a system be instituted to disseminate the requisite knowledge and skills pertaining to implementation of new regulations and laws with emphasis on the state-of-the-art and the future enhancements of measurement capabilities. The effects of the regulations and laws on other Agency units, especially in the area of enforcement, must be determined.

### Technology

Two general areas of technology were considered with regard to the compliance function. The first deals with the area of chemical and instrumentation capability. The Committee was most impressed with the willingness, capability, and ingenuity of the laboratory personnel. Several of these people could be singled out as outstanding in these attributes. It was noted, however, that the laboratory was not up-to-date in many areas of measurement/instrumentation and that the laboratory personnel were not pressed to maintain knowledge of most recent developments.

4. The Committee makes the priority recommendation that best available science be in use at all times in EPA and especially at NEIC. This means that up-to-date instrumentation must be at the facility; that anticipatory-methodology for monitoring is a priority consideration; and that feedback from laboratory and field personnel with regard to technique/instrumentation enhancement or correction be given the same status.

It is not the usual function of NEIC to be involved in methods development since it is already fully occupied and understaffed. Nevertheless, the enforcement needs of this facility, and thus the Agency, must both be met and anticipated. Preferably federal funds would be used at EMSL laboratories specifically for this development function; otherwise a special facility must be set up with methods development as its sole reason for existence. (Note also, the importance of this capability with respect to recommendation #3.)

The second area of consideration has to do with bioassay as a research/compliance/diagnostic tool. The ultimate value of monitoring and monitoring/research capabilities is whether they can be applied toward the health and well-being of organisms in general and humans in particular. It happens that chemical substances not only may affect living tissues but also may be concentrated by them and/or detected by them at concentrations below the sensitivity of customary chemical detection methods. Contrarily, the limit of instrumentation-detection may have no bearing whatsoever on the levels where effect of a particular chemical substance occurs. There are four aspects of bioassay methodology that need to be treated in somewhat separated contexts, as follows.

5. There are also scientific publications and standardized techniques for the bioassay of a great variety of environmental conditions and substances. Some of these utilize indigenous organisms, and some use standardized organisms for particular kinds of media. Usually a matrix can be set up using several species to assay a particular chemical condition or set of conditions. The techniques are replicable, inexpensive, and involve low concentrations of the potential toxicant. Many of them are already known to EPA and appear in EPA publications. Their use should be emphasized and applied regularly to compliance problems.
6. In addition to the use of multiple-species bioassays to establish environmental effects of a pollution load, EPA needs to get away from the exclusive use of the LC50 method of judging effects. Bioassays can be based upon observed behavioral changes, loss of taxis (e.g., phototaxis), reproductive abilities, embryological developmental changes, respiration, and other functions.
7. Scientific literature is replete with publications listing the concentration of elements and compounds by plants and animals in all possible environments. Not only can this be used as a diagnostic/analytical aid, but also as an early evidence of the type of tissue dose that is usable in exposure assessment. Enforcement of certain regulations should be dependent upon precisely this type of information. It is recommended that collation of existing data be instituted and that techniques be standardized employing various types of concentrating organisms in different media on a routine basis.

8. The Committee also wishes to emphasize the extreme importance of measuring effects of environmental pollutants on human populations. To date, this approach has not been incorporated into data-gathering requirements. This can be done in several ways, but the two most obvious methods are as follows:
- a. direct determination of the sensitivities of voluntary individuals to specific substances in a manner similar to allergy testing;
  - b. surveys and examinations of "exposed" and control populations (similar to the TEAM surveys being done by EMSL-Las Vegas). The data obtained by these means can subsequently be introduced into legal proceedings to document for exposure and risk assessments. The setting-up of protocols for such planned surveys should be one of the primary objectives of the Environmental Protection Agency;
  - c. examination of body tissues and fluids which store or excrete environmental pollutants, e.g.'s urine, breast milk, fat, blood, and bone marrow in both humans and other animals.

#### Specific Aspects of the NEIC Laboratory

Laboratory discipline appeared to be excellent and the personnel most capable. Good housekeeping has made for an appropriate atmosphere in the prep rooms and in the organic and inorganic labs for carrying out assigned tasks. The Committee was most impressed with the ingenuity displayed by technical people in all laboratories with a special compliment to the inorganic lab's staff.

In previous visits, the Committee has made a point of emphasizing the fact that monitoring, like charity, begins at home, therefore, monitoring of air and water should be exemplified



within EPA facilities. Chemical vapors could be detected in the vicinity of the clean lab and in the adjacent vestibules although, for the most part, the condition of the air seemed to be good. It was also noted that drinking water quality was checked only to see if it met standards; priority pollutants and heavy metals had not been measured or monitored.

9. It is recommended that monitoring systems be set up in NEIC to make sure that its own environment is in conformance with EPA and OSHA regulations.

Much attention is given to protection of workers by methods provided by the Bureau of Mine Safety and similar agencies. Employee health and safety is contracted for with regard to exposure and risks, but not much information was available for review.

10. It is recommended that records be kept on the fate or condition of former employees and on turnover rates for health or other reasons and that these records be made available for evaluation.
11. A method should be considered whereby remote sampling could be accomplished in chemically-contained areas for preliminary investigation and diagnostic measures.
12. Protective suits should be tested prior to human exposure, in potentially dangerous areas, to be sure humans will not be harmed, i.e., whether or not the suit is usable for the particular chemical atmosphere or harmful to the person wearing it.
13. Installation of smoke detectors and sprinkler systems in the Quail Street Laboratory is recommended as well as safe storage disposition of documents stored there.  
(Action is already underway or has been taken.)

The following commentary is rather detailed, and recommendations can be noted within the text. The radiation measurement laboratory should be operative by March, 1981. To date, it is equipped with a Packard Tri Carb Soft Liquid Scintillation Counter. Under construction is the housing for a NaI crystal -- with lead bricks. A multi-channel analyzer is in place for use with the crystal. The on-hand L-P gas proportional counter is not sufficiently sensitive for measurements expected; thus a apparatus is on order (with capability of measuring low energy gamma as well). This can be upgraded to be used with a Germanium-Lithium Scintillator -- the state of the art for measurement of gamma radiation. The instrumentation indicates that NEIC will have a good base for undertaking radiometric analyses, although specific types of samples to be measured are not yet known -- with the exception of radium.

The "regulated laboratory" will be used to prepare samples for analysis, and biocontainment features should be more than sufficient for protection of workers. (Recommendation 15.) Exposure protection will have to be provided through monitoring the amount of radioactive material permitted in samples or by providing lead-shielded work areas using portable lead bricks. Since the regulated lab is manned by contractor personnel, safety procedures will fall under the contractor's safety practices and procedures.

## Legal Aspects

The Committee was pleased with the evident professional competence of the staff scientists and the obvious high morale they displayed. The degree of cooperation and mutual understanding between the legal and scientific staff perhaps is unsurpassed in the federal government. The Committee particularly was impressed by the high sense of commonality of purpose we witnessed, rather than the unfortunate circumstance so frequently encountered elsewhere, where lawyers and scientists go their separate ways. Whether the organization be private or public, joint missions all too often are frustrated by petty rivalries and misunderstandings.

The degree of cooperation between NEIC and the Department of Justice apparently leaves much to be desired. NEIC exists to support regulatory programs of the agency, including legal actions when necessary. Determination of which suits to institute is one function of the Department of Justice. One goal of bringing a suit in major environmental matters (i.e., those in which NEIC would be involved) is to settle as many pending and prospective cases as possible. The selection of the proper case, the one with the most favorable cost-benefit ratio, is all important. Case selection should be a joint effort between persons and offices responsible for handling the legal and the scientific issues. To overlook the value of NEIC in this process is to waste a genuine resource of the federal government. Validity of legal arguments rests on scientific data and conclusions in many environmental cases. Validity of these scientific data and conclusions raises questions properly within the purview of the Center. The procedural aspects are within the purview of Justice attorneys; the substantive ones remain the responsibility of scientists.

14. The Committee recommends that allowing NEIC be allowed a more active role in case selection, thus helping to promote uniform enforcement standards nationwide. This goes beyond the question of staff morale--indeed, it concerns the very essence of NEIC's mission within the government. The importance of that mission is certain to increase as the number of suits aimed at "white collar crime" increases. The Committee believes that we are fortunate to have a center for investigation that already benefits from productive cooperation between scientists and lawyers. The obvious advantages should be extended to deliberations not limited to internal agency affairs.

#### Communication and Public Awareness

As has been noted, internal communication is a strongly positive factor in NEIC with a two-way flow of information between staff and administrators. This is enforced by an excellent data bank and library, although means of communication with the legal community is not quite as well defined.

With regard to external interchange, especially with the public, there is room for considerable improvement.

15. The Committee recommends that NEIC promote public awareness of the work performed there. Seminars and tours could be instituted for the education of the public at large which also would enhance the reputation of EPA.

16. Another mechanism strongly suggested is the reinstatement of the Enforcement Conference which was so effective before the modern compliance methodology. This type of operation, strongly directed from administrative levels, could be most effective with regional problems, especially if risk assessment and health data could be introduced at these proceedings.
  
17. The movie which was shown to the Committee and is used as part of the indoctrination of new personnel had little effect. There should be at least two such vehicles -- one for indoctrination purposes and one for public education. The objectives of each should be clearly agreed upon and production should be a co-operative venture between administration/staff and the Public Awareness Office. In fact, it is suggested that the Public Awareness Office be invited to advise on all public education techniques and strategies.

Finally, it should be remembered that the decade of the 80's, referred to by EPA, involves the educational development of young people now in school. Thus, an excellent opportunity is afforded NEIC to present its material to that section of the public who will be making the important environmental decisions by the end of this decade.