

## **ENVIRONMENTAL AUDIT AND REGULARITY AUDITING**

### **Potable Water for Human Consumption in Rural Localities—Office of the Comptroller General of Chile—Regular Environmental Auditing, 2003 (Chile)**

**Theme:** Environmental Audit and Regularity Auditing

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#### **I. Subject**

Potable water used by the rural population is obtained from underground sources and is at high risk of being polluted by fertilizers, pesticides, insecticides and sewage.

#### **II. Objectives**

To verify the quality of rural water for human consumption in the metropolitan region of Santiago from the chemical, physical and bacteriological and health standpoints, through a systematic, critical and selective evaluation of the procedures and actions that the Environmental Health Service of the Metropolitan Region (SESMA) should carry out to protect the environment.

To verify the oversight and monitoring performed by SESMA with respect to the quality of drinking water in rural areas.

To verify compliance with the rural potable water program by the Sanitation Department and the Regional Water Works Directorate of the Ministry of Public Works.

#### **III. Scope**

Revision and analysis of water problems and the rural drinking water system; identification of vulnerable zones; sampling and testing; compliance with the legislation regulating this area.

#### **IV. Methodology**

After a study of the universe and the users, a sample of 31 localities in the metropolitan region (9.3% of the total), covering 30% and 40% of the population served by the Rural Potable Water Services (APR) of the Ministry of Public Works and by makeshift private systems, respectively.

Fifteen APR services, two private recreational areas and 14 makeshift private systems were considered in low-income localities classified by SESMA as being at high health risk.

Background was obtained on rural water systems in the municipalities of the metropolitan region: types of uses, sources of supply. Executives from the Metropolitan Region's Health Service and the Water Works Directorate were interviewed.

Surveys and interviews were conducted of users and managers of water treatment plants; the control exercised by SESMA was verified.

Samples of water were taken for chemical, physical and bacteriological testing to determine whether the parameters established in Chilean Standard No. 409 of 1984 on water for human consumption were being complied with.

## **V. Results of the Audit**

- Poor sanitary conditions were found in 93% of the wells and pumping systems of makeshift private systems.
- Fifty-two percent of the total visited presented problems such as the presence of fecal coliforms.
- Pockets of contamination from pesticides used in farming, poultry operations, hog farms, fish culture, sanitary landfills, affect 45% of the localities visited, causing damage to the region's ecosystems.
- Seventy-one percent of makeshift private systems present problems of bad smells rarefied air, turbidity in the drinking water, problems with water intake, and others.
- Problems in the makeshift systems and in the formal piped systems include contamination by sulphates, iron, filterable solids, ammonia, chlorides, manganese, lead, cadmium, turbidity.
- Thirty-one of the services sampled had parameters above the maximum limits established in Standard 409/84 for the elements mentioned in the preceding point.
- One hundred percent have at least one parameter that is above the maximum limits established in Standard 409/84.
- Lack of specialized staff for monitoring.
- Frequent changes in the structure of SESMA teams.

## **VI. Recommendations**

- There needs to be an improvement in the quality and timeliness of oversight by SESMA and the National Environment Commission (CONAMA), which is responsible for overseeing compliance with the constitutional guarantee of the right to live in an environment free from pollution, environmental protection, conservation of nature and of the environmental heritage.
- Maintenance and permanent updating of the inspection records and fiches of the APR's systems.

- SESMA needs to spend enough money to support a team of duly trained professionals to perform monitoring and inspection of the piped water services and makeshift systems.
- Standard 409 of 1984 needs to be updated and adapted to the international standards defined by the World Health Organization.
- The penalties established by law for infractions should be applied.
- A national cadastre of rural localities in doubtful sanitary condition should be prepared.

## **VII. Experience**

Application of the new technologies has been very positive in most aspects of social and economic development. However, obsolete laws and regulations need to be updated, since they have impeded efficient and effective oversight and coordination of the standards regulating this area by the public agencies, SESMA and CONAMA. Duly programmed and effective and timely procedures need to be established.

SESMA is studying the different situations that affect the public water supply in rural zones in order to prepare a health risk index and a regional cadastre of makeshift systems.

The administration needs to take steps to establish programs with specialized human and financial resources for due and timely control, so that adequate preventive measures can be taken and users' health can be protected from the impacts of the current situation.