

**INTEGRATED
ENVIRONMENTAL
SERVICES. INC.**

IES

**A REPORT CONCERNING THE INFLUENT/EFFLUENT
CHARACTERISTICS
OF
SOLAVITE, A PHYSICAL CATALYST**

Prepared for:

SOLAVITE INTERNATIONAL, INC.
501 BRIKELL KEY DRIVE
SUITE 503
MIAMI, FLORIDA 33131

Prepared by:

Mr. Steven L. Bahr

Approved by:

Mr. Charles E. Culpepper, Jr., P.E.# 14203

July 13, 1993

**INTEGRATED
ENVIRONMENTAL
SERVICES. INC.**

IES

July 12, 1993

Mr. Jaime Rojas, Director
General Services of America, Inc.
501 Brickell Key Drive, Suite 503
Miami, Florida 33131

Re: The Influent/Effluent Characteristics of Solavite

Dear Mr. Rojas:

In accordance with our agreement of June 9, 1993, Integrated Environmental Services, Inc., (IES) is pleased to submit to your our report on the above referenced topic.

Thank you for permitting our company to be of service to your organization.

Respectfully submitted,
INTEGRATED ENVIRONMENTAL SERVICES, INC.

Steven L. Bahr
Project Manager

TABLE OF CONTENTS

I Conclusions and Recommendations

II Solavite

III Theory of Operation

IV Tests

EXHIBITS

Exhibit 1

Exhibit 2

APPENDIX

Appendix 1

I CONCLUSIONS AND RECOMMENDATIONS:

Based on a review of all the literature made available by the manufacturer; discussions with factory representatives; site visits to locations where the product is installed and an analysis of the laboratory results of tests performed on the influent/effluent; it is the opinion of Integrated Environmental Services, Inc. That the changes in water characteristics through the Solavite Physical Catalyst are insignificant in so far as it relates to potability.

More specifically, if the water entering the Solavite device is potable, the effluent is also potable; therefore, these devices may be used in applications such as culinary, food processing and personal uses as well as in industrial or commercial applications in which the requirements for potable water are unimportant.

II SOLAVITE

Solavite is a physical catalyst that was developed by French physicist, Andre Emil Barbier and Brazilian physicist, Luis Meneses. Research was undertaken in the United States by Dr. Chaim Yosef J.F. Mariategui-Levi, whose PhD is in Inorganic Chemistry. According to Dr. Mariategui-Levi, Solavite is a treatment device which, when used to treat water, reduces apparent hardness, prevents scale build-up, and removes existing scale in pipes, boilers and other vessels without an increase in corrosion or the use of chemicals.

The process involves the crystallization of the dissolved mineral salts in the form of nucleated crystals. Solavite can therefore be called a "Physical catalyst" or a "Crystallization Promoter".

The basic components of Solavite are a cell and a housing. The cell contains a mixture of diamagnetic species (charcoal, Alkalimetal Halides) and a volatile solvent to avoid the presence of oxygen in the cell.

III THEORY OF OPERATION

According to the inventor, Solavite combines three activities which result in the formation of nucleated crystals-electric, magnetic and the flow of the liquid (viscous flow).

The two concentric cylinders of the device and the liquid moving perpendicular to them form an electric condenser. The interaction of the fluid flow and the concentric cylinders have the possibility of "putting together" two beams of different signs, and crystallization will result in the formation of embryos.

A synergistic factor is the weak magnetic field of the earth, now modulated by the cell, which is full of diamagnetic species. This results in a non-homogenous field. This field

provides a weak force that will act on the charged particles in the solution. This effect is very weak, but it provides the means to promote crystallization.

Thus, in the device, we have an electric field that separates the ions and creates concentration gradients near the surface of the electrodes (i.e. near the cell or the housing). We also now have a force that pushes the ions from the magnetic field into the moving ions. These forces together with the flow effects are responsible for the promotion of crystallization. For a detailed description of the theory of operation written by the inventor, refer to Appendix 1.

IV TESTS

A complete battery of tests were performed to determine the effluent potability (refer to Exhibit 1 and Exhibit 2). These tests verify that if the influent meets Florida Administrative Code 17-550 Drinking Water Standards, the effluent also meets the same standard.

All tests were performed by a laboratory with both State of Florida and Federal Environmental Protection Agency certification.

EXHIBIT 1

ORIENT 332
ADDRESS INTEGRATED ENVIRONMENTAL SVCS.
500 DEER ROO
MIAMI SPRINGS, FL 33166

PAGE: 1
DATE: 06-30-1993
LOG#: 5988-2

SAMPLE DESCRIPTION: INTEGRATED ENVIRONMENTAL
SOLAVITE
TAP H₂O ANALYSIS

LABEL: EFFLUENT
DATE SAMPLED : 06/24/93
DATE RECEIVED: 06/25/93
COLLECTED BY : A. LUTZ

PARAMETER	INFLUENT RESULT	EFFLUENT RESULT	UNITS	METHOD	DETECTION LIMIT	EXTRA DATE	ANAL. DATE	ANALYS
Arsenic	BDL	BDL	mg/1	206.3	0.010	06/25/93	06/29/93	
Barium	BDL	BDL	mg/1	208.2	0.1	06/25/93	06/25/93	
Cadmium	BDL	BDL	mg/1	213.2	0.005	06/25/93	06/25/93	
Chromium	0.000	BDL	mg/1	218.2	0.005	06/25/93	06/25/93	
Mercury	BDL	BDL	mg/1	245.1	0.001	06/25/93	06/28/93	
Lead	BDL	0.006	mg/1	239.2	0.005	06/25/93	06/25/93	
Selenium	BDL	BDL	mg/1	270.3	0.01	06/25/93	06/26/93	
Silver	BDL	BDL	mg/1	272.2	0.005	06/25/93	06/25/93	
Calcium	36.9	17.3	mg/1	215.1	1.0	06/25/93	06/25/93	
Magnesium	3.9	3.7	mg/1	242.1	1.0	06/25/93	06/25/93	
Sodium	37.5	37.0	mg/1	273.1	1.0	06/25/93	06/28/93	
Copper	BDL	BDL	mg/1	220.1	0.10	06/25/93	06/25/93	
Oil	9.04	9.12		150.1	0.01	06/24/93	06/24/93	
Conductivity	329	329		110.2	5	06/24/93	06/24/93	

- BDL – Below Detection Limits
- All analyses were performed using ETA, ASTN, USTN, or Standard Methods.

AP # 90-0376G
HRS # E86240, 86356
SUB HRS# 86122, 86109, E86048
ADEM ID # 40720

Respectfully Submitted,

5988-2