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TRIP REPORT TO "PETROMIDIA" PLANT IN CONSTANTA, ROMANIA

MAY 2 - 18, 1992

By: Dr. Peter W. Ifland

**World Environment Center
419 Park Avenue South, Suite 1800
New York, New York 10016**

June 1992

DISCLAIMER

The opinions expressed herein are the professional opinions of the author and do not represent the official position of the Government of the United States or the World Environment Center.

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I. EXECUTIVE SUMMARY

During the period of May 2 to May 18, 1992, I visited the Petromidia plant in Constanta, Romania as a volunteer specialist for the International Environment and Development Service program of the World Environment Center (WEC). My mission was to advise on technical management elements concerning worker safety and environmental quality.

Petromidia is a fully integrated refinery and petrochemical operation. Heavy, high sulfur crude from the Middle East is refined to gasoline, kerosene, diesel oil, fuel oil, aromatics and feedstock for the chemical plant. Chemicals produced are ethylene, propylene, glycols, low and high density polyethylene and polypropylene.

The plant is unable to meet current government environmental standards consistently. This is of concern since even tighter standards are expected in the future. In addition, the plant is located along the shores of the Black Sea about 15 kilometers north of a major beach resort area. This location brings extra pressure on the plant to control air and sea pollution.

The plant's environmental effects come from **SO₂** and **CO** release to the air; **BOD**, **COD** and sulfur compounds from the wastewater treatment plant effluent into the sea; and from contamination of the soil inside the plant by petroleum and wastewater leaks and spills. The water table under the plant is 1.5 meters or less below surface but the available data do not indicate a ground water contamination problem.

The plant's environmental concerns arise from three problem areas:

- * **Equipment failure.** Processes do not operate reliably due to breakdown of pumps and valves related to inadequate repair and maintenance. API oil/water separators are a particular problem. The wastewater treatment plant is not performing properly. Upgrading of the facilities is urgently needed.
- * **Misuse of chemicals.** Sulfur emissions to the air and excess sludge production in the wastewater treatment plant come among others from inadequate concentrations of monoethanol amine (MEA) and diethanol amine (DEA) in the gas scrubbers and from contamination with ammonia in the sour water steam stripping operation.
- * **Housekeeping.** Cleanliness and orderliness in the main process units is good. In the peripheral areas, spills and leaks contaminate the soil and risk seepage into the ground water.

The major areas of concern for worker safety are:

- * Explosion and fire in the finished product loading area.
- * Inhalation toxicity of H₂S, particularly in the desulfurization and gas recovery system area.
- * Lead exposure in the battery repair area.
- * Exposure to chronic health hazards, particularly carcinogens.

The principal recommendations for general management are:

1. Develop specific, measurable objectives for improvement of environmental and worker safety performance.
2. Take steps to begin to move from a command and control style of management to a more participative mode. For example, develop and agree on a Mission Statement for the Environmental Protection Department (I have provided a suggested draft). Another example is to form a team between the local and central maintenance and repair organizations to improve reliability of the process units.
3. Management should develop and practice a waste minimization policy. Produce less waste and save money on raw material and on waste disposal.
4. Maintain ongoing contact with WEC to report progress against the recommendations made here and to request additional help where needed.

The technical recommendations are directed primarily at ensuring that the Petromidia plant does not contaminate the Black Sea. The plant should not risk being shut down by the government under pressure from environmental activists, the resort hotel owners or the Ministry of Tourism. The highest priority project is to upgrade the wastewater treatment plant. Improved monitoring of ground water from outside the underground wall, at the sludge dumping pit, and at the wastewater treatment lagoon is needed.

Petromidia plant management has made important progress in improving environmental performance in the past year. Significant reductions in sulfur emissions are expected from process changes made during shut down. Upgrading of the wastewater treatment plant will provide much needed improvement in the quality of effluent going to the sea. Management attention

and follow-up are needed to insure continued progress.

II. INTRODUCTION

During the period May 3 to May 16, 1992, I visited the Petromidia refinery and petrochemical plant in Constanta, Romania. I participated as a Volunteer Expert in the International Environment and Development Program of the World Environment Center. The project was conducted under a grant from the United States Agency for International Development.

The scope of the work was to conduct a review of the human and environmental safety practices at the plant, report on current practices and make recommendations for improvement; review the operation of Midia's environmental management program and recommend improvements.

I recently retired from Proctor & Gamble, a large multi-national consumer products company. For the last ten years of my work with Proctor & Gamble, I was Manager, Professional and Regulatory Services with a corporate, world wide responsibility for the human and environmental safety and for regulatory matters for the company's products. I have a special interest in using my experience to help Central and East European countries effectively manage their environmental problems.

Sponsorship of Volunteer Specialists like Dr. Ifland is one of many activities carried out by the World Environment Center within the framework of its Technical Assistance Program for Central and Eastern Europe. The World Environment Center acknowledges Dr. Ifland who gave freely of his time and expertise in assisting us in our work in this part of Europe.

III. FINDINGS

The Petromidia plant is the newest of Romania's petroleum processing plants. It is a fully integrated refinery and petrochemical operation. Its design capacity is 3,500,000 tons of crude oil per year. The plant's refinery products include fuel oil, diesel oil, kerosene for jet fuel, gasoline, aromatics and feed stock for the petrochemical plant. Chemical products are ethylene, propylene, glycols, high and low density polyethylene and polypropylene. The plant also produces coke and by-product sulfur. The refinery supplies "over the fence" fuel oil to an adjacent power plant that in turn supplies steam and electricity to Petromidia and to surrounding communities.

The Petromidia refinery is supplied with heavy, high sulfur crude brought by ship from the Middle East to a terminal adjacent to the plant. The higher quality Romanian crude goes preferentially to the older refineries located inland. Finished product is shipped from the plant largely by ship and rail.

A critical feature of the plant is that it is located on the shores of the Black Sea. A major advantage of this location is that the plant has easy access to low cost sea shipment of its products to potential customers in hard currency countries. A major disadvantage is that the plant is about 15 kilometers up the coast from a huge beach resort in Mamaia. The plant, with its tall smoke stacks and bright flares, is the most visible industrial operation seen from the resort area. The local people believe, probably wrongly, that Petromidia is the principal source of pollution of the Black Sea in the area. Thus, the plant is vulnerable to increasing pressure from the hotel operators and from the government for tight control of its air and water emissions.

The Petromidia plant is owned and operated by the State. Government control is imposed from the Ministry offices in Constanta. Money for maintenance and modernization has been tightly controlled since the plant started up twelve years ago. For a variety of reasons, Petromidia has not been profitable since 1987.

The management system in the plant is still highly centralized and relies exclusively on top-down direction. Each employee at all levels has a job description which precisely and explicitly describes that employee's activities and responsibilities. With this arrangement, it can be expected that the employee will do what is required in the job description and no more. It seems that there is an implied disincentive for the employee to take the initiative and do more than what is written.

Recently, a reward for good performance is being introduced into the compensation system. Each department is allocated a small percentage of the department's payroll to be distributed to workers in the department who have better than average performance. Who gets the additional money and how much is negotiated between the worker and his manager.

The plant has been shut down for the past seven months and is now beginning to start up, starting with crude refining at the front end of the refinery. Additional units will be brought on stream sequentially with full operation expected by the end of June. Money for process modernization and for contracted expertise in refinery operations is being provided by a joint venture, TMR, between the French petroleum company Total, and a Swiss investment firm, Mark Rich. The expectation is that the plant will be privatized within the next year with TMR as the most likely candidate for a joint partnership with the government. Profitability in hard currency is a critical objective.

The principal environmental impacts from the Petromidia plant are air emissions of SO₂ and CO; sulfur compounds and BOD in the wastewater treatment plant effluent; and soil and possibly ground water contamination from spills and from sludge leachate.

The plant's environmental problems arise from three principal causes:

- * Equipment failure. The processes do not operate reliably as designed due to inadequate maintenance and repair. The wastewater treatment plant does not operate properly. API petroleum/water separators fail and overload the wastewater treatment plant because pumps break down repeatedly. A preventive maintenance program does not exist.
- * Chemical deficiencies. Ammonia used for corrosion control leads to excess sludge that has to be dumped because the incinerators do not work. Shortage of MEA and DEA leads to incomplete scrubbing of H₂S and release of SO₂ to the atmosphere.
- * Housekeeping. Cleanliness and orderliness in the main line process units is good. However, in the peripheral areas, scrap metal and spills need to be cleaned up. Return of spent catalyst now stored in rusting drums offers an opportunity to recover a significant amount of money and prevent future safety and environmental problems.

According to the plant management, in Romania, air and water quality standards and limits are negotiated with the Government for each manufacturing site. For the Petromidia plant, these standards were negotiated in 1987 but the plant has never been able to operate consistently within the

legal limits. Furthermore, as Petromidia begins to compete in the world market and as Romania joins the international community, it will be required to comply with the global standards.

Fortunately, where the plant is out of limits it is usually by a factor of only two or three, not by factors of tens or hundreds. Thus, there is every reason to expect that with upgrading of the wastewater treatment plant and with proper maintenance and operation of the processes and equipment during and after start-up, the plant will be able to meet current and future environmental and safety standards.

Responsibility for worker health and safety falls within the Worker Protection Department. Because of the Communist Party's avowed interest in matters directly related to the workers well being, this operation is relatively well established. Each worker is given safety training once per year. The training facilities are above average for the plant in terms of equipment, facilities and housekeeping.

The Worker Protection Department also operates the Toxicology Laboratory which is responsible for analytical monitoring of air, particularly for explosion potential. In collaboration with the Medical Department, the Toxicology Laboratory analyzes blood from workers exposed to lead in the battery repair operation and urine from all process unit workers once per year. Ten to twelve cases of above normal analytical values are detected each year. These cases are sent to the Municipal Hospital in Constanta for medical follow-up.

There were no fatalities in the plant in 1990 and two fatalities in 1991. Both were due to preventable circumstances. Other lost time accidents are due largely to mechanical injuries. Excluding the two fatalities, the Lost Workdays Case Rate in 1991 is comparable to average US plant performance.

The major areas of concern for worker safety are:

- * Explosion and fire, particularly at the finished product loading operation. Tighter controls and more intensive monitoring are required to minimize the risk.
- * Inhalation Toxicity of H₂S, particularly in the Desulfurization and Gas Recovery System. Air monitoring and alarm systems should be upgraded to prevent potentially fatal exposures.
- * Lead exposure in the battery repair operation. Monitoring and control of exposure must continue.

- * Chronic health hazards, particularly carcinogens, are not recognized as such. The Toxicology Laboratory analyzes for some chemicals that are chronic health hazards but the program needs to be expanded.

To assist the Worker Protection Department in deciding which monitoring programs need to be expanded, I provided copies of "The 1991-1992 Threshold Limit Values for Chemical Substances, Physical Agents and Biological Exposure Indices" prepared by the American Conference of Governmental and Industrial Hygienists; a copy of "Occupational Diseases - A Guide to Their Recognition" published by the US Department of Health, Education and Welfare, National Institute of Health and Safety; copies of Material Safety Data Sheets for some chemicals handled in the plant; and lost time accident statistics from selected US manufacturing operations.

Direct responsibility for environment impact and for worker safety is with the line operating unit managers. The unit managers clearly accept these responsibilities although they are held at lower priority than production objectives.

Staff responsibility for environment and for worker safety falls to the Service-Protection and Prevention Department (Please see Appendix E). This department appropriately has direct access to top management in the plant - to the Deputy General Manager for Production, Mr. Porcisteanu. The sections within this department are Fire Protection, Environment Protection (Eng. Monica Vargancsik), Worker Protection (Eng. Maria Dumitru) including the Toxicology analytical Laboratory, and the Wastewater analytical laboratory (Eng. Monica Gregore).

The principal activities of these staff organizations is to develop relevant data using their analytical capability, conduct regular inspections, advise operating units of deficiencies found, and develop appropriate reports to management and the government. In this mode, these staff organizations are seen as policemen, looking for violations, reporting to higher authority and advising on monetary fines to managers who violate the standards. A more effective mode would have Environment Protection and Worker Protection work as partners with the operating units to help the plant achieve its environmental and safety objectives.

The plant made remarkable progress in the past year to improve its environmental impact performance:

- * An Environmental Protection Department was established with an experienced Principal Engineer and three Inspectors.

- * An Environmental Impact Assessment was conducted by a French consulting firm. This study identified and quantitated the plant's environmental releases and recommended measures for improvement. Many of their recommendations already have been implemented.
- * An adequate supply of chemicals (Mono Ethanol Amine) for stripping H₂S from process gasses is on hand. Improved operation of the gas stripping unit will lead to marked reductions in SO₂ releases to the air and increase the amount of high grade sulfur recovered for sale.
- * Corrosion control is switching from ammonia to caustic. This will result in proper steam stripping of H₂S from sour water and sulfur recovery in the Claus unit. This will result in a major reduction in the quantity of sludge produced at the Wastewater Treatment Plant and increase the amount of high grade sulfur available for sale.
- * Several proposals have been developed for modernizing the Wastewater Treatment Plant.

The Government Ministries, Petromidia plant management and the TMR organization should be congratulated for the environmental impact and the worker safety progress to be expected as the plant starts full scale operation again.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Recommendations to General Management.

1. The Deputy General Manager, Mr. Forcisteanu, should negotiate and agree specific, measurable objectives of environmental and worker safety performance with the Refinery Manager, the Petrochemical Manager and with the Services Manager. In these discussions, Mr. Forcisteanu may wish to use the expertise of his staff organization - Mr. Croitoru, Ms. Dumitru and Ms. Vargancsik from the Service-Protection and Prevention and perhaps Mr. Marcean from the Management Department.

The objectives for improvement could be expressed in terms of compliance with ambient air and water quality standards, reduction in the number of lost time accidents, no fatal accidents, hours of continuous operation of the local water treatment plants, per cent efficiency of operation of the DEA gas scrubbers or any other objective measurements of performance.

General management should follow-up with operating unit managers frequently to communicate management's expectation of real progress - Mr. Forcisteanu once a month, Mr. Nicolcioiu, General Manager, perhaps every six months.

2. Management at all levels should begin to move from a rigid, command and control, top down management style. I would suggest two specific examples:

(1) Highly specific, written job descriptions to describe activities and responsibilities are no longer used in progressive Western companies because they are too constraining and discourage initiative in problem solving. A preferred approach is to develop Mission Statements for managers and for organizations. These statements focus on the profit building end-result management expects the organization or the worker to deliver.

For example, The Mission of the Environmental Protection Department might say: "The mission of the Environmental Protection Department is to improve the environmental impact of the Petromidia plant. To carry out this mission the Department will ..." (Please see Appendix H for the complete statement I have drafted). If it is decided to proceed, Mr. Croitoru and Ms. Vergancsik could develop a proposed Mission Statement using this draft as a starting point with final discussion and agreement with

Mr. Porcisteanu.

Another suggested change in management style is in team building. Repair and maintenance is a continual problem. Preventive maintenance does not exist. The plant has excellent repair and maintenance facilities and a skilled work force. Team building between the local operating unit maintenance organization and the central repair and spare parts organizations will improve the effectiveness of all process operations and increase the profitability of the plant. Responsibilities for the team might include priority setting, scheduling preventive maintenance, effective utilization of the plant's repair and maintenance facilities and best use of the plants resources in emergencies. Better reliability of operations is the Mission. Improved operations and profits can be expected.

3. General management should develop and execute a waste minimization policy. Waste minimization is the first principle of good waste management. Reduce the amount of waste produced, reduce the amount of waste that needs to be disposed of and thereby increase efficiency and save money. Many of Petromidia's environmental problems are the result of faulty operations earlier in the process stream. Money spent for chemicals to increase sulfur scrubbing in the local MEA units means less than SO₂ in the flares, less sludge to be disposed of in the Wastewater Treatment Plant and more sulfur to sell for a profit - Good Business Practice!
4. Management is requested to keep ongoing contact with the World Environment Center. Reports of progress in following up the recommendations made here and requests for additional information or help are specifically requested. The contact is:

Mr. Thomas J. McGrath
World Environment Center
419 Park Avenue South
Suite 1800
New York, New York 10016 USA
Telephone (212) 683-4700
Fax (212) 683-5053

B. Technical Recommendations.

Most of the recommendations listed below are directed to ensuring that Petromidia is not polluting the Black Sea and jeopardizing the tourist business in the beach hotels to the south. If it is determined that the plant is polluting the sea, then immediate measures must be taken to solve the problem. If Petromidia is not polluting the sea, this fact must be made known broadly. My assessment is that Petromidia must not risk having the plant shut down by the government under pressure from environmental activists or from the tourist industry because of either real or perceived pollution of the beaches.

1. Upgrade the Wastewater Treatment Plant. This is a high priority project needed to ensure that the effluent from the plant is not polluting the sea. The redesigned plant needs to be reliable, easy to operate, simple to maintain and efficient in removing BOD and COD. With more efficient sulfur removal in the main plant, sludge disposal should not be an unmanageable problem and sludge incineration may not be needed.
2. Establish an expert team to ensure that all elements of the sulfur recovery processes are working effectively. All parts of this system must work if air and water emission of sulfur compounds is to be brought under control. The plant is designed to receive 88,000 tons per year of sulfur in the crude. Design recovery is 37,000 tons of elemental sulfur. Last year the plant recovered 1,481 tons. The unrecovered sulfur polluted the air, overloaded the sludge disposal system and cost the plant the lost profits from sale of elemental sulfur.
3. Provide improved instrumentation and monitoring for H₂S in the Desulfurization and Gas Recovery Unit area. Personal monitors are recommended.
4. Increase analytical and worker health monitoring for chronic health hazards, particularly carcinogens. The publication "1991-1992 Limit Values for Chemical Substances, Physical Agents and Biological Exposure Indices" I provided to Eng. Maria Dumitou lists chemicals which should be monitored and recommends analytical methods.
5. Analyze the sludge from the Wastewater Treatment Plant for heavy metals. If heavy metals or other toxic chemicals are detected, monitor the soil and ground water around the sludge dump to determine if any are escaping into the ground water flowing into the sea.

6. Continue the project to restore the effective operation of the underground water collection grid. This system must operate effectively to ensure that the ground water which flows to the sea from under the plant is not contaminated with spills and seepage.

7. Improve the sampling and analysis program in the ground outside the underground barrier wall, particularly along the eastern perimeter of the plant. The current program will detect leakage through the wall. A program which samples below the level of the wall in the ground water is needed.

8. The wastewater lagoon is believed to have a clay and plastic liner to prevent leakage into the ground water. The analytical monitoring program needs to be improved to ensure that leakage is not occurring. If leakage is detected, the situation must be corrected.

9. After the Wastewater treatment plant is upgraded and when the plant is in full operation, contract with an independent institute to conduct a survey of pollution in the sea. This study needs to be done in the area immediately adjacent to the plant and including the ship terminal. The objective of the project is to detect any pollution coming specifically from Petromidia, separate from any pollution which may be coming from other sources in the area. It can be established that the plant is not polluting the sea and that other sources are responsible, this fact needs to be made known to the plant workers, to the hotel owners and operators, to the appropriate government ministries, and to the public.

10. The Technical Committee approved the purchase of much needed equipment and supplies for the Toxicology Laboratory on 27 January, 1992. This is a good proposal and the equipment should be purchased and put into operation promptly.

11. Most of the analytical work being recommended here will be carried out by the Wastewater Analytical Laboratory. The methods and equipment used by this laboratory are out of date. Analytical data should be available quickly enough to be used to control problem situations, rather than to record history after the fact. The Laboratory should develop a request to purchase the equipment and supplies needed to carry out their mission.

12. Many electrical transformers are excess or obsolete. They are described as containing "special oil". If this oil is PCB, special precautions will be required for safe disposal.

APPENDIX A - Photographs

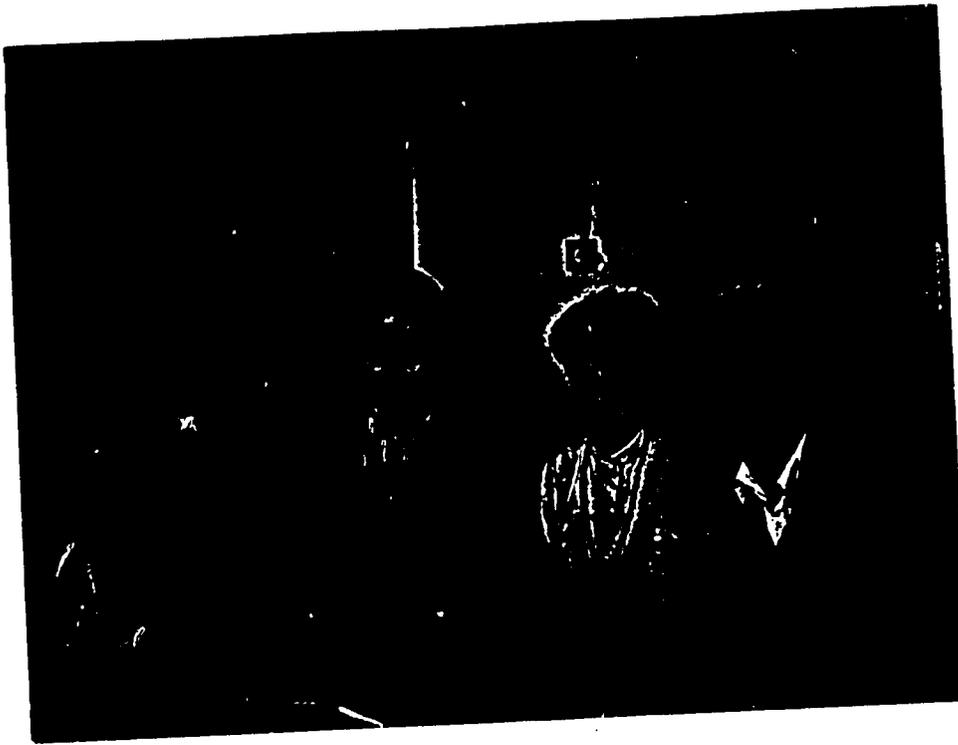
Petromidia, Constanta, Romania - May 1992



WEC Volunteer Expert, Peter Ifland and Ms. Monica Vargancsik, Manager, Environmental Protection Department, review emission data.



Peter Ifland and Ms. Vargancsik examine the abundant shell fish (Mollusk) population along the Black Sea in the resort area south of the plant.



WEC experts Clark Malchow and Peter Ifland with Ms. Vargancsik and Mr. Aurelian Nicolae, Manager of the wastewater treatment plant, review proposals for modernization of the wastewater treatment plant.



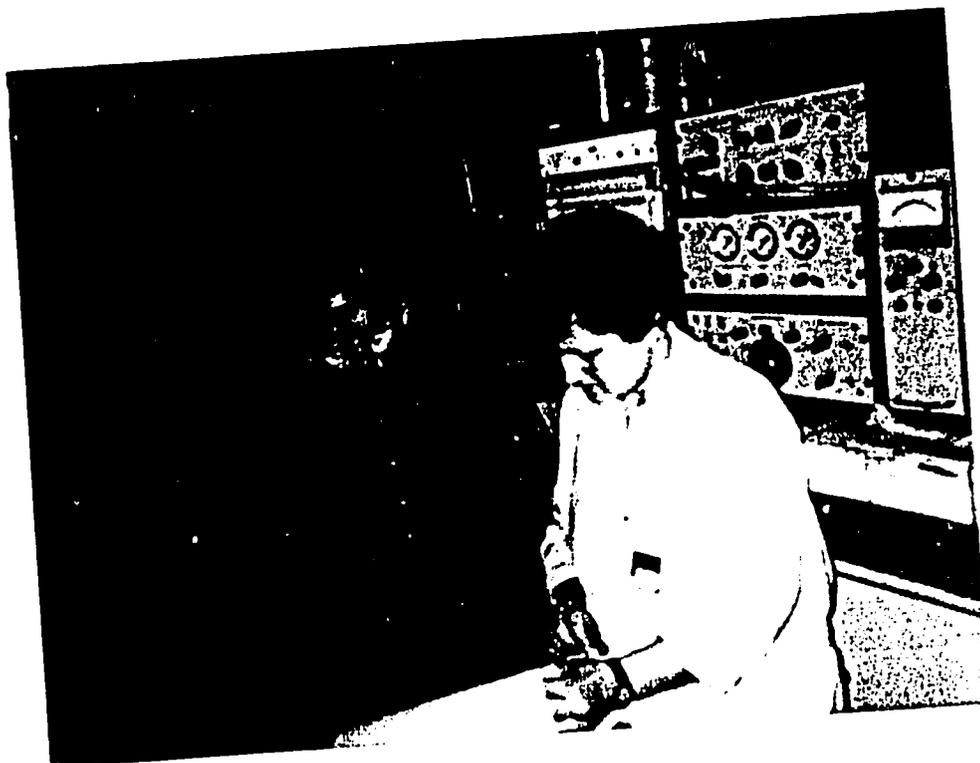
Peter Ifland and Ms. Marie Paraschiv, head of the analytical laboratory at the wastewater treatment plant, go over data on the plant effluent.



Ms. Mirela Popatanase and Peter Ifland review data
in the wastewater analytical laboratory.



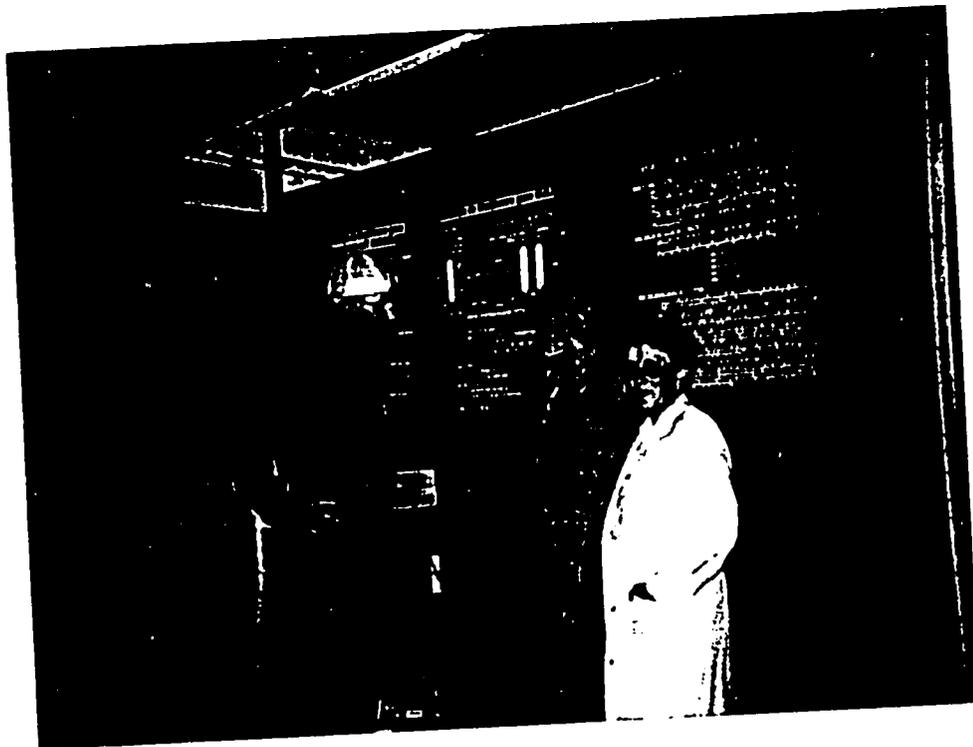
A view of the plant from the beach resort area to the south.



Peter Ifland and Ms. Maria Papacostea, Head of the Toxicology Laboratory, discuss ambient analyses for SO₂ concentrations.



Ms. Maria Dumitru, Head of Worker Protection Department, Peter Ifland and Ms. Maria Papacostea, Head of Toxicology Laboratory, following-up on a worker safety issue.



Ms. Dumitru and Mr. Ifland in the worker safety training facility.

APPENDIX B - ITINERARY AND PERSONS VISITED

- May 2 - 4 Enroute Cincinnati to Constanta, Romania via Bucharest. Briefing by Mr. Liviu Ionescu, WEC Representative.
- May 5 Meet Petromidia Deputy General Manager - Mr. Vasile Porcisteanu. Introduction to the Environmental Protection Department - Eng. Monica Vargancsik.
- May 6 Tour of refinery - Eng. Gali Rosca.
Refinery Manager - Eng. Vasile Voinescu
Desulfurization and Gas Recovery - Eng. Potlogea
Discuss plant environmental impact - Eng. Vargancsik
- May 7 Tour Wastwater Treatment Plant - Eng. Aurelian Nicolae, WWT Plant Manager; Mr. Clark Malchow, Expert; Engs. Vargancsik and Rosca; and WWT Plant Laboratory Manager, Maria Paraschiv. Reviewed responsibilities and procedures of the Environmental Protection Department - Eng. Vargancsik and Inspectors.
- May 8 Tour Petrochemical plant - Engs. Vargancsik and Rosca
Eng. George Stanescu - Petrochemical Plant Manager.
Eng. Dan Mocanu - Olefins Unit Manager.
Eng. Gustav Vargancsik, Pyrolysis Unit Manager.
Visit the Wastewater Treatment Laboratory - Eng. Mirela Popatanase.
- May 11 Discussion with Mr. Carter Brown, TMR water treatment and analysis expert. Continue review of plant environmental organization and responsibilities - Eng. Vargancsik. Visit Toxicology Analytical Laboratory - Eng. Marieta Papacostea, Manager.
- May 12 Discussions in the Worker Protection Department, Eng. Maria Dumitru, Manager. Meet with General Manager Alexander Nicolcioiu and Mr. Theodor Marcean, Head of Management Department to discuss conclusions and recommendations.
- May 13 Discussion with Mr. Theodor Marcean on organization and management.

- May 14** Discuss Mission Statement for the Environmental Protection Department - Eng. Vargancsik. Follow-up visit to the Wastewater Analytical Lab.
- May 15** Wrap up and conclusions - Mr. Marcean and Eng. Vargancsik.
- May 15-18** Enroute Constanta to Cincinnati via Bucharest.

APPENDIX C - Cards of Principal Contacts

Dipl. eng. Alexandru Nicolcioiu
General Manager



Address: DN 22 B - Km 23
Constanta - cod 8736
Phone: 916/6 01 35; 6 18 77
Home: 916/5 43 41
Telex: 14 207; 14 402
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PETROMIDIA S.A.
ROMANIA

Dipl. eng. George Stănescu
Clefin's Plants Manager



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PETROMIDIA S.A.
ROMANIA

Dipl. Eng. Vasile Porcișteanu
Deputy General Manager



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Dipl. Eng. GUSTAV VARGANCSIK
Chief of Pyrolysis Plant
MONICA VARGANCSIK

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Eng. Teodor Mihail Marcean
Head of Management Department



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PETROMIDIA S.A.
ROMANIA

VARGANCSIK MONICA
Engineer - Environmental
Department
Petromidia.

CAST RESEARCH INSTRUMENTS

LIVIU IONESCU, Dipl. Eng.
HEAD OF MARKETING DEPT.

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ROMANIA

MALCOLM
PIRNIE

ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

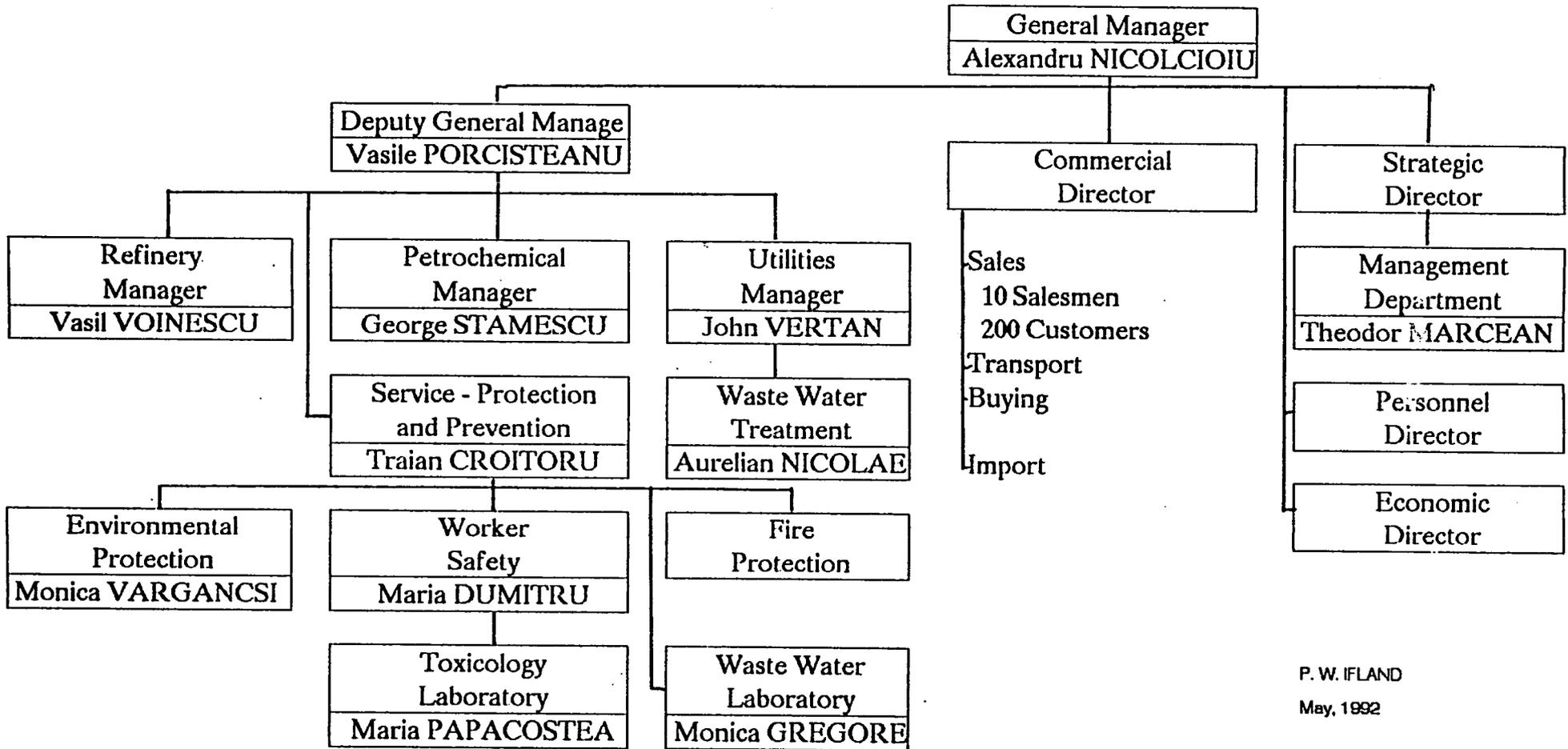
H. CLARK MALCHOW, P.E.
ASSOCIATE

home address on back

MALCOLM PIRNIE, INC.
4162 A CANAL ST.
NEW ORLEANS, LA 70119-5941

504-482-4800
FAX: 504-482-2020

Organization Chart
PETROMEDIA
 Constanta, Romania



P. W. IFLAND
 May, 1992

APPENDIX E - INFORMATION REQUESTED

The following lists the information requested during my visit. Since I do not have access to this information, I suggest WEC call on appropriate experts in their member companies to provide the information.

Mr. Porcesteanu, Deputy General Manager. He repeated his request for information on what environmental and safety monitoring should be done in a refinery/petrochemical complex. He also requested information on the preferred methods and instrumentation required. If WEC is to maintain its credibility with PETROMIDIA, this information must be supplied.

Mr. Nicolae, Wastewater Treatment Plant Manager. A list of US air and water quality standards. This information will be of broad interest in the plant since they foresee having to meet these world standards.

Mr. Nicolcioiu, General Manger. Please provide the name and address of a contact in the European chemical industry association, CEFIC. A source of European technical and legal consultants was specifically requested.

Ms. Dumitru, Manager Worker Protection. Please provide information on the worker health surveillance program of a US refinery including analytical methods and instrumentation.

Ms. Vargancsik, Manager Environmental Protection. Please provide examples of mission statements of the Environmental Protection Department of US petrochemical producers. Include responsibilities, organizational relationships and skills of people.

APPENDIX E - Curriculum Vitae

P.W.(Peter) IFLAND

8560 Wyoming Club Drive
Cincinnati, Ohio 45215 USA

CONSULTANT ON HUMAN SAFETY AND ENVIRONMENTAL QUALITY

I CAN:

- Advise on the development of policy on issues of human safety and environmental quality.
- Analyze legislative and regulatory initiatives and develop scientifically sound and operationally practical advocacy positions.
- Evaluate human and environmental safety assessments and devise appropriate risk management strategies.
- Work across multinational, multicultural boundaries to assure effective issues management.
- Provide an interface and point of access between industry and government.

I HAVE:

- Directed and managed the human and environmental safety organization for Procter & Gamble, a large, multinational consumer products company.
- Recognized emerging areas of societal concern about product safety and environmental quality and implemented timely policy and organizational responses.
- Evaluated human and environmental risk assessments and initiated appropriate risk management action.
- Worked personally and through industry associations to develop advocacy positions on emerging safety and environmental legislation, regulations and directives in the US, Europe, Latin America, and Japan.
- Managed the Research and Development function for Procter & Gamble's businesses in western Europe. Resident for nine years in Brussels, Belgium..

MOST RECENT POSITION:

Manager, Professional and Regulatory Services,
The Procter & Gamble Company,
Ivorydale Technical Center, Cincinnati, Ohio, 45217 USA.
Retired July, 1991.

PRIOR INDUSTRY ASSOCIATION RESPONSIBILITIES;

Board of Directors and Executive Committee, American Industrial Health Council.
Board of Directors, Chemical Manufacturers Association.
Board of Directors, California Environmental Working Group.

EDUCATION:

PhD, University of Texas, Biochemistry, 1956

August 1991

APPENDIX G

Draft Mission Statement Environmental Protection Department

The Mission of the Environment Protection Department is to improve the impact of the Petromidia Plant on the environment. To carry out this mission, the Department will:

- * Monitor the environmental performance of operating and service units by collecting, analyzing and reporting relevant information and data.
- * Initiate studies of the environmental impact of the Petromidia Plant, both internal and external. Recommend appropriate corrective action where needed.
- * Review current and proposed engineering designs and operating procedures to ensure appropriate measures are taken to protect the environment. Suggest improvements where needed.
- * Ensure that all government standards and limits are met. Work with government authorities as new standards are developed so that these new standards and limits are reasonable and responsible.