

## **PREPARATION FOR ENVIRONMENTAL IMPACT EVALUATORS**

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### **Summary**

Environmental Impact Assessment (EIA) is recognized as an important technique for managing the environmental impacts of human actions. EIA provide information to help the decision makers to draw conclusions about the state of environmental resources and relate the findings to appropriate management issues. The Environmental Impact Evaluator (EIE) examines, corrects, gives priorities, confirms and suggests amendments of the environmental impacts of a work or activity or the environmental impacts of a company's activity. The EIE usually offers his/her services to the development of a project or to the authorities during a project's environmental impact assessment. EIE must have knowledge of a variety of environmental, socio-economic, and technological themes, for a wide range of facilities. EIE is employed by the governmental and local authorities as well as by the private sector.

The training of an environmental impact evaluator could be done either by Universities (undergraduate or postgraduate studies) or by postgraduate studies of various associations or during special training programs.

Cases in which the EIE should participate are public consultation during an Environmental Impact Assessment procedure, Environmental permitting,

Environmental monitoring and reporting, or in the evaluation of the implementation of an Environmental management system.

## **1. Objectives of Environmental Impact Assessment**

EIA is the process of assessing likely environmental impacts of a proposal for the development of a project in order to exchange information with decision makers and the public. The EIA system is designed to prevent or mitigate the adverse environmental impacts that are caused by activities and projects.

EIA is recognized as an important technique for managing the environmental impacts of human actions. EIA may be defined as the process of identification, analysis and appraisal of all the relevant natural processes and human activities which affect the quality of the environment and of environmental resources. The objective of EIA is to facilitate the framing and implementation of optimal policies and strategies, accounting for both environmental effects and other priorities (e.g. cost constraints) and to foresee and quantify the impacts of a project or activity and to establish the necessary measures in order to minimize them. Two points worth emphasizing about EIA are that: a) it is practical (since the purpose is to facilitate making a decision) and b) comprehensive (since relevant aspects which might affect the decision should be incorporated).

EIA provides information to help decision makers to draw conclusions about the state of environmental resources and relate the findings to appropriate management issues. EIA can help managers and decision makers to solve environmental planning and management problems, improve their understanding of environmental conditions and design protective or remedial strategies.

Different assessment approaches will be appropriate under different circumstances. Many countries have adopted this tool in various forms and procedures. Usually an Environmental Impact Statement (EIS) is used for the assessment.

In the E.U. countries this has been accomplished by the Directive 85/337 and the Council Directive 97/11/EC, amending Directive 85/337/EEC, on the assessment of the effects of certain public and private projects on the environment.

In conclusion, operation of the EIA system to review development activities is geared to take into account all possible adverse environmental impacts and appropriate preventative measures.

## **2. Nature of EIE's Work**

The EIE examines, corrects, gives priorities, confirms and suggests amendments for the proposed actions in order to minimize the environmental impacts of a job or activity or the environmental impacts of a company's activity. The Evaluator usually offers his/her services to the authorities during an EIA process of a project. The Evaluator could work during any of the stages of the EIA procedure such as: preliminary documentation; public environment reporting (PER); Environmental impact statement (EIS); public inquiry; or an accredited assessment process.

At first the EIE has to estimate and decide what exactly the assessment is for, i.e. what decisions will be taken into account and what questions must be answered. These provide the ground-rules for the assessment.

Having decided this, it is necessary to decide if it is competent to do the assessment. How long will it take and how much will it cost, the level of accuracy, confidence and sophistication involved. What is the availability of existing knowledge and whether or not research will be required to obtain necessary background information; additionally, what tools for modeling and/or analysis are available.

The Evaluator's Assessment could take place in different stages of the procedure, for example:

*Assessment by Preliminary Documentation* is likely to be appropriate, when the number and complexity of relative impacts is low and locally confined; or, the relevant impacts of the controlled action can be predicted with a high degree of confidence; or, the relevant impacts have been or are being adequately assessed under legislation.

*Assessment by Public Environment Report* is likely to be appropriate when an assessment of the relevant impacts is expected to focus on a relatively small number of key issues; and an adequate assessment of these issues will require the collection of new information and/or further analysis of existing information.

*Assessment by Environmental Impact Statement* is likely to be appropriate when an assessment of the relevant impacts is expected to raise complex issues, or a large number of issues; and an adequate assessment of these issues will require the collection of new information and/or further analysis of existing information to provide guidance to developers and

*Assessment by Public Inquiry* is likely to be competent authorities on scoping. Scoping is the stage of the EIA process when decisions are taken on the information to be submitted as part of the EIA process appropriate when the relevant impacts are likely to be relatively high; or the relevant impacts, or the management of those impacts, are outside the control of a single proponent; or a public inquiry is necessary or desirable to ensure effective and efficient public involvement in the assessment process.

*Assessment by Accredited Process* is where a central or regional authority will manage the assessment. Usually the results are brought for public discussion, public participation and consultation with experts and public.

During the process, the evaluator will be required to report on the suitability and adequacy of the data and methodologies utilized by the applicants and their consultants in the preparation of the EIS. On the basis of the data presented, the evaluator will also be required to report on the correctness or validity or any assumptions or conclusions made in the EIS.

The task of evaluators will extend to all matters which fall within the scope of the EIS. Without being limited to, the evaluation will need to address, for example, the following

key assessment issues: planning and operations; noise; air quality; land transportation; land use planning; community health issues; water quality and hydrology; risk assessment; flora and fauna; heritage; socio-economic issues.

The Evaluator will be required to have a close liaison with the authorities involved and their consultants. To a practicable extent, the Evaluator will review the proposed study methodologies and working proposals at an early stage in the assessment process and provide advice, as appropriate.

The Evaluator will be required to prepare Evaluation Reports, during the different stages of the procedure and in the case of permitting to be involved in the granting of the environmental conditions permit.

An Evaluator is responsible for preparing multi-disciplinary environmental assessments, using different kind of data such as chemical, engineering, biological and hydrological. Duties include researching, preparation and presentation of comprehensive environmental impact assessments for proposed works and projects. The duties of an evaluator are expanded to on site inspections, measurements of pollution and controlling the degree of enforcement of the environmental law.

### **3. Career Opportunities and Job Description**

An EIE, must have knowledge of a variety of environmental, socio-economic, and technological aspects for a wide range of facilities, as for example permitting applications, the conduct of successful negotiations with the regulating agencies, Odor and Emissions Reduction, Credit, Air Quality Impact Assessment, Dispersion modeling studies, Complex terrain modeling, Cooling tower impact analysis, Accidental release impact modeling, Traffic related air quality impact analyses, medium-small size enterprises, Accidental Chemical Release Prevention, Compliance Assistance, Emissions inventories, Legislation compliance audits, Regulatory compliance plans, Agency-mandated compliance efforts, Negotiation assistance, Air Pollution Control Systems, Technical performance evaluations, Industrial Hygiene - Health & Safety Services.

Minimum Qualifications are graduation from an accredited college or university with a Bachelor's degree in Engineering or one of the physical sciences and at least one year of experience in environmental impact evaluation. For senior positions or higher requirements a Master's degree is required. Often, EIA evaluators are educated in postgraduate courses.

Environmental Impact Evaluators are employed by governmental and local authorities' agencies not only as evaluators, but also for the following tasks: Implementation and enforcement of the environmental law, Health, Emergency Management, Environmental Protection, Conservation and Natural Resources, Transportation etc. In the private sector the Environmental Evaluators are employed as consultants in projects related to regional and urban planning, industrial sites management, remediation, education, environmental action plans and systems, permitting procedure etc.

Furthermore, the Environmental Evaluators may coordinate various departments; secure detailed environmental evaluations; prepare written Environmental Impact Statements satisfying zoning applicants, professional engineers, architects, planners and land surveyors; conduct preliminary consultations to offer advice on possible environmental conflicts, and obtain changes to site plans, secure legal documents such as covenants, and obtain water quality data, tree surveys, biological and hydraulic mitigation plans; Research, prepare and present comprehensive environmental impact assessments for proposed actions and projects; represent the competent authority during the different phases of the procedure;

To obtain the above expertise, the Environmental Evaluator must possess the following knowledge and skills: Considerable knowledge of environmental engineering and the chemical, biological and hydraulic sciences, considerable knowledge of local well field protection requirements, water and sewer connection requirements, hazardous waste sites, coastal and freshwater wetland permitting, air quality protection, storm water disposal and lake excavations, knowledge of environmental impact assessments, knowledge of public relations principles and techniques, ability to prepare multi-disciplinary assessments using chemical, engineering, biological and hydraulic data, ability to establish and maintain effective working relations with subordinates, superiors, and various officials of private organizations, and ability to research and present to a variety of groups comprehensive environmental impact assessments for proposed land developments.

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### **Biographical Sketches**

**Mr. Alexandros Karavanas** has two Masters degrees, one in Chemical Engineering from the National Technical University of Athens, Greece, awarded in 1977, and the other in Pharmacy awarded by the University of Athens in 1991. He also undertook postgraduate studies in Sanitary Engineering at the Athens Sanitary School in 1990. Since 1981 he has been working for the Ministry of the Environment, Planning and Public Works, Government of Greece, and since 1989 he has been working in the Environmental Permitting section of the Ministry.

During 1997-2004 Mr. Karavanas had been a representative of the Greek Ministry for the Environment on the EC Committee concerned with Article 19 of the EC Directive 96/61 “Integrated pollution, Prevention and Control (IPPC)” concerning the reporting of IPPC industries, and on the Technical Working Group on Food and Milk of the European IPPC Bureau in Saville, Spain. He has participated in several projects of the Ministry concerned with IPPC and has publications on IPPC and related issues such as Best Available Technologies (BAT) and control of industrial emissions.

**Professor Nicholas Markatos** received the Diploma of Imperial College (DIC), University of London, in 1973, and Ph.D in Engineering from the same College in 1974. After working in industry for a number of years, during 1982 until 1986 he was Reader at University of Greenwich, UK, and Director of its

Mathematical Modelling and Process Analysis Section. In 1986 he became Professor at the National Technical University of Athens (NTUA), Greece, Head of Chemical Engineering in 1990, and Rector of the same university during 1991 and 1997. In 2002 he was a Senior Visitor to the Department of Applied Mathematics and Theoretical Physics, University of Cambridge, UK, and Fellow of that university's Selwyn College. In 1996 he was awarded the *Doctor Honoris Causa* (Dr.H.C) degree by the University of Chemical Technology and Metallurgy, Sofia, Bulgaria. Currently he is Head of the Department of Chemical Engineering at NTUA.

Professor Markatos is consultant to a number of companies and organizations including NASA Langley Research Centre Combustion Engineering, Boeing Inc., and member of several professional organizations and associations including AIAA and New York Academy of Sciences. His main research interest is in Computational Fluid Dynamics, and Air Pollution Modeling and Control. He has published more than 150 scientific papers including 4 books.

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