LEGAL ASPECTS AND RISK ANALYSIS MANAGEMENT

BRAZILIAN APPROACH

MATTER PRESENTED IN GTE LATIN AMERICA
ENVIRONMENT SEMINAR

BY

OFÉLIA MARIA S.DE M.MAKARON
CETESB - São Paulo State Agency for
Environmental Protection
São Paulo - Brazil

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This matter was prepared based on several speechs presented by Luiz Antonio de M. Awazu (Special Operation's Manager) at FIESP, ABIQUIM and Others environmental Organizations.

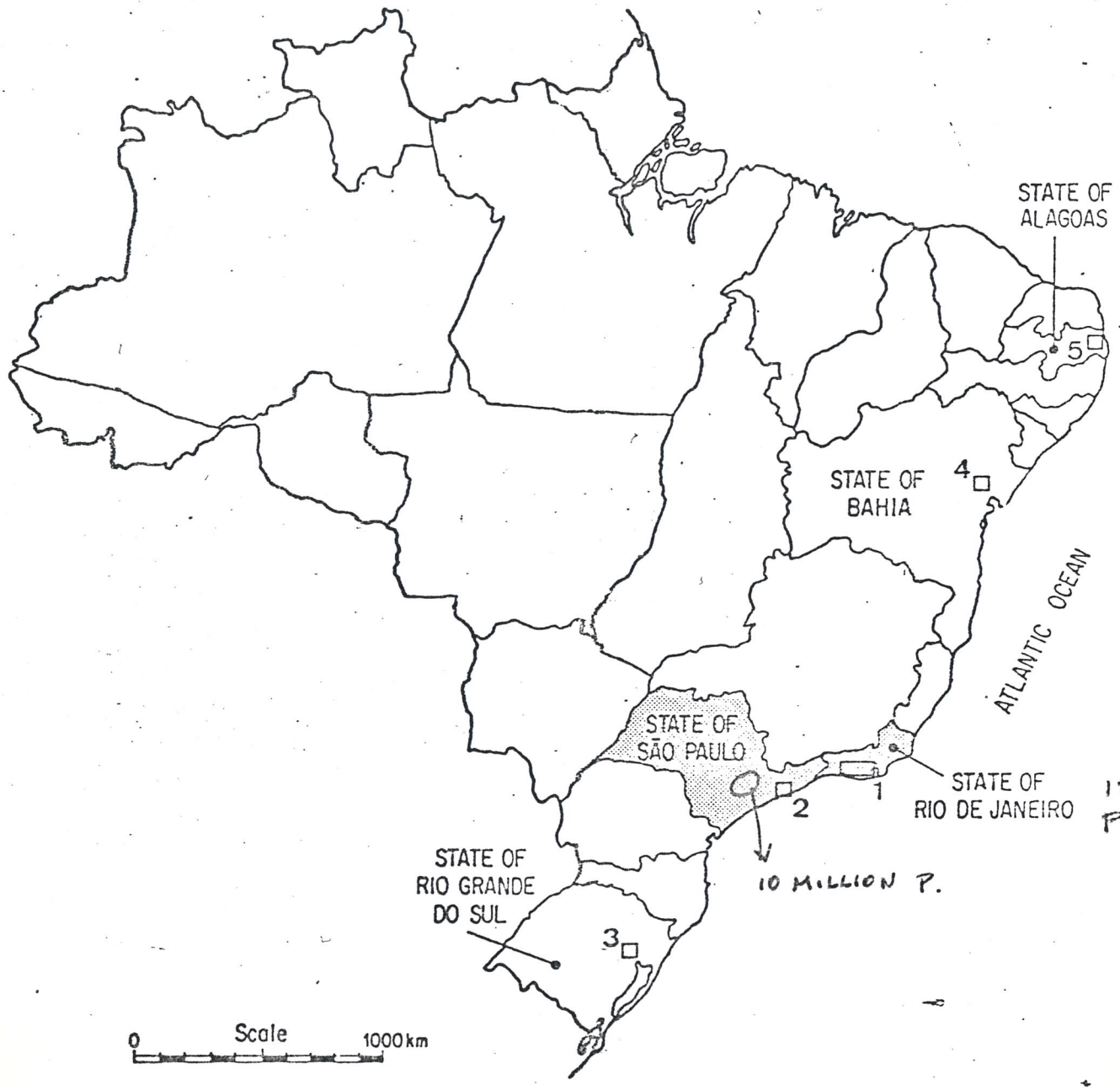

Fig. 1 - Map of Brazil with Locations of the Main Industrial Installations


RODOVIAS
FERROVIAS
PORTOS
TERMINAIS
USINAS DE ÁLCOOL
PARQUE INDUSTRIAL
POLO PETROQUÍMICO
POTENCIALIDADE DE RISCO POR ÁREA REGIONAL

Althoug being a developing country, Brazil has a reasonable number of highly diversified industrialized areas with significant amounts of hazardous substances in storage or in process.

It is not uncommon to find large as well as small industries in those areas dischargin significant quantities of pollutants to the environment while in normal operation conditions.

Recently a new law has been approved by the Brazilian Congress by which the construction permit for any new large industrial installation can only be granted after an environment impact assessment of the installation is made by the proponents and evaluated by the competents authorities.

According to this law, a risk analysis is a required topic of the environmental impact report.

However, very few people in the local state environmental control agencies and in the industry know' how a risk analysis should be preformed or how it should be used for managing industrial risks.

BACK GROUND ANALYSIS

THE SPECIAL OPERATIONS MANAGEMENT HAVE WORKED IN ALMOST 300 ACCIDENTS AND PARTICIPATED IN THE ELABORATION OF A NUMBER OF EMERGENCIAL RESPONSE PLANS IN WHICH THE SERRA DO MAR'S PLAN OUTSTANDS. THIS MANAGEMENT HAS GOT MUCH EXPERIENCE AND KNOWLEDGE IN EMERGENCIAL RESPONSE PLANS , WHICH HAS MADE EASIER THE RESEARCH WORK BEGUN IN 1985

ENVIRONMENT ACCIDENTS

STATISTICS (ACCORDING TO PLACES) - 1986

PLACE	Nº	%
BAIXADA SANTISTA:	23	20,72
GRANDE SÃO PAULO:	56	50,45
LITORAL NORTE:	8	7,20
CAMPINAS:	8	7,20
VALE DO PARAÍBA:	11	9,90
OTHER REGIONS SP:	4	3,60
OTHER STATES:	1	0,90
OTHER COUNTRIES:	0	0,00
TOTAL:	111	100,00

STATISTICS (ACCORDING TO SOURCES) - 1986

SOURCE	Nº	%
TANKER:	2	1,80
TRUCK:	53	47,74
PIPE:	5	4,50
WATER TREATMENT PLANT:	2	1,80
INDUSTRIAL PLANT:	13	11,71
SHIP:	22	19,81
GAS STATION:	2	1,80
MARITIME TERMINAL:	1	0,90
NOT IDENTIFIED:	9	9,00
NON PERTINENT	2	1,80
TOTAL:	111	100,00

STATISTICS (ACCORDING TO SUBSTANCES) - 1986

SUBSTANCE	Nº	%
PETROLEUM:	9	8,10
DARK PETROLEUM DERIVED:	16	14,41
LIGHT PETROLEUM DERIVED:	9	8,10
SEVERAL CHEMICALS:	69	62,16
NOT IDENTIFIED SUBSTANCE:	8	7,20
TOTAL:	111	100,00

STATISTIES (ACCORDING TO CAUSE) - 1986

CAUSE	Nº	%
OPERATIONAL FAILURE:	58	52,25
MECHANICAL FAILURE:	32	28,82
NATURAL PEHNOMENON:	4	3,60
NOT INVESTIGATED:	17	15,31
TOTAL:	111	100,00

The frequency of environment accidents which have been occuring during the last ten years, particularly in the State of São Paulo, clearly demonstrates that the present prevention and control system have not been operational.

Concerning the environment accidents response, the State Companies envolved demonstrates, in practice, isolate iniciatives, with internal contingency plans and not integrated with the community.

The decision regarding environment to be taken either by the government or by the industries have been more and more based on the quantity of risks the society runs; consequently, there's been increasing use of methodologies that are able to reflect the real situation of the impact caused by the accidental release of chemical products in the environment.

What is going to be aproached is related to industrial risk analysis, that may, immediatelly after its accidental release in big proportions, cause serious damages to the population and the environment, differently from the environmental risk that deals with the daily and permanent release of chemical products, endangering man the environment at long term period.

WHAT DO WE WISH ?

- TO DEFINE SYSTEMATICALLY THE PARAMETERS WHICH WILL DEFINE A POTENTIALLY HAZARDOUS POLLUTING SOURCE.

- TO ENUMERATE THE METHODOLOGIES THROUGH WHICH THE POTENTIAL RISKS CAN BE ESTIMATED.

- TO PROVIDE WITH SAFE MEANS TO ELABORATE A RISK REDUCTION PROGRAM IN KEEPING WITH ACTUAL RISKS.

- TO IMPLEMENT AND STIMULATE TECHNICO-ECONOMIC CONDITIONS FOR IMPLEMENTING THESE PROGRAMS.

At the present moment, we are trying to develop a domestic metodology to the appliance of criteria, indentification , classification and management of potential risks of the sources and activities which cause environment accidents , so that we may supply the authorities with the necessary tools to obtain quantitative answers of risks envolved in the industrial activities in process, storage and trans - port, contributing this way to the adequate organization of the civil defense plans in areas in danger, and mainly to reduce the probabilities of catastrophies occurence as in Bhopal, Vila Socó, México City and others. And also, through technical and scientific basis supply assistance to adquate the present legislation or even the elaboration of new laws concerning the use and occupation of the land, taking into consideration parameters that quantify the potential risk of certain industrial activity.

There is nothing established; criteria and the principles are being studied together with ABIQUIM*, FIESP**in order to compromised the government and the industrial objecitive. This matter demands time and well trainned people.

* ABIQUIM - Brazilian Association of Chemical Industries

** FIESP - Industries Federation of São Paulo State

RISK IS A MANAGEMENT RESPONSIBILITY OF THE INDUSTRY

YET, IT IS THE GOVERNMENT'S RESPONSIBILITY TO:

- APPROVE OF,
- LICENSE

THE POLLUTING ACTIVITIES, THEREFORE, THE GOVERNMENT IS CORRESPONSSIBLE FOR MAINTAINING WORK AND SAFETY CHARACTERISTICS AND CONDITIONS.

There was a certain confusion when the matter risk analysis emerged, it was thought that CETESB or other State Company in charge of the pollution control would determine the industrial risk. No,much on the contrary, the responsibil - ity was the industry's, and it should use it as a tool for its own safety, for the safety of its image before the public, its a tool that makes one aware of certain instal - lation risks.

It is necessary to know its critical points and if possible their management. We will not be able to abolish them, but we will certainly be able to administrate their potential risk.

If I as a State Company approve and license a industrial activity, I must know that, latter that industries may cause some problems.

Then or I require a reduction of that risk or I take comple mentary measures, in the community concerned so that I may be prepared to what may happen. But it is understood if I permit a certain industrial ativity, I already know this risk one is running; then, I may either accept it or not.

If I accept, I must elaborate a consistent defensive plan . If I do not accept, the industrial activity will need re- structuring adequatelly; but from the moment I approve and give permission, I am co-responsible with the activity con- cerned.

As a custom, we only talk of industry, but all the segments of the activity are involved: transport, storage and distri bution. We do not talk about industry itself.

If we could detect the dangerous happenings that may occur with a certain source, if we could know the process of occurance of these happenings (it may be a toxic, or an ex-

plosion liberating energy in the form of over pressure, or a huge fire break, in the form of heat, I know what may gene - rate this kind of activity, I know it through techiniques , the process of functionning of these phenomenos) then, we would be able to adopt efficient measures of administration.

On the other hand, we may ease the racional planning of the land use, in balance with the social, political and economi- cal interests.

LAND USE PLANNING IN ACCORDANCE WITH SOCIAL, POLITICAL AND ECONOMICAL INTEREST

- AFTER KNOWING THE RISK ASPECTS INVOLVED IN A SPECIFIC POLLUTING SOURCE OR ACTIVITY,

  WE CAN ESTABLISH, RULES AND RESOURCES FOR RISK ADMINISTRATION, MEETING COMMUNITY INTEREST.

- THE SIMPLES FACT THAT THERE IS AN INDUSTRIAL PLANT JUSTIFIES ITS IMPORTANCE IN THE SOCIAL CONTEXT OF THE REGION, ITS IMPORTANCE RELATED TO THE TAXES IN THE REGION, AS WELL IN THE EMPLOYMENT AND PRODUCTS AVAILABILITY IN INTERNAL AND EXTERNAL TRADE.

Then how, can we introduce a legislation of industrial zonning, obeying the potential risk criteria? It is quite hard. Sometimes, an industry is installed in secluded area in comparison to the urban regions; ten years later, the enlargement of the urban activities need gets closed to the industry, causing conflicts, as the industries cause pollution.

Something must be wrong in this system, we must plan in advance, if that industrial activity has a working life between 20 to 50 years, in ten years, it can not be put into risk, as its investiments were elaborated basing on a long term period. Then it is our duty, as government, to motivate the adequate legislation over this matter , to obtain the discipline of the urban growth.

Another aspect: a industrial district allowing only the built of industries is created, but still the population start building their houses along the district; then, there is the conflict... as depending on the kind of industry, it is necessary larger gaps of space to separate the two areas: the safety valve that avoid the conflict at short and medium term period. The risk analysis also helps in this aspect.

As far as the rules and the ways risks of administration is concerned, we must take into consideration the major present political awareness of the communities: they have a large participation in the means of information and they are able to move with certain facility. Our administration is concerned with the hold that retain the communities today, in this sense: we must take advantage of the credibility we have with them and offer technical answers that enable us , as government, to administrate possible conflicts.

The metodology of the risk analysis may enlighten the real risks, which allow more technical and solid discussions or debates.

Besides, we must be aware of the social benefits that are brought by the industrial activity. Then, the part that risk is concerned should be a goal for the management of the industry, which must solve this problem in a technical way; but also the community must understand the social benefits caused by the industrial activities. From then on, it will be possible that the conversation will have more concrete basis...

Once the potencial risk of certain pollutant source or activity is known, the government and the industry may together lead the administration of conflicts, taken into consideration the policy and the community, as well as among the industries themselves.India, and soon after, Brazil would prohibit the appliance of such product - the decision must be obeyed by everyone. But the government has the duty of, before prohibiting, ask whether we are not able to deal with that risk... What happened there? Was it sabotage? Was there a failure in the operation? Was there any project error? Wouldn't it be possible that we are able to manage or technical knowledge to detect the critical points of the operation of such product, and then search for adequate measures to avoid the potential risk? And how much would it cost? Can the industries afford such extra cost?

We should throughly study the possibilities of analysis, before solving, political pressures should not determine the decisions that do not suit the situation.Pentachlorinephenate, as another example; almost ten years ago, two workers died by the removal of the product (it was imported in an irregular way, in an inadequate packing and in inadequate form - in powder instead of in scale; and the safety condition for the product were also inadequate); under theses conditions, a special regulamentation was estblished for the use of this product, determining safety measure, which are interesting but they also create high expectatives around the product that, this way receive an unfair 'LABEL', as it does not correspond to such risk scale.

The establishment of analysis mechanism and evaluation of risk management will cover this GAP: The product is dangerous to a certain extent, in so and so situation, in such conditions: the prevention measures are so and so, with such and such costs ...

WHY ARE WE TRYING TO ORGANISE AND DEFINE RISK ANALYSIS ?

FACTORS TO BE TAKEN INTO ACCOUNT:

- A LOT OF REFERENCES TO BE RESEARCHEAD AND INTERPRETED, CONSIDERING BRAZILIAN REALITY.
- A VERY GOOD KNOWLEDGE ABOUT THE MATTER, MAINLY BASED ON INDIVIDUAL EXPERIENCE.
- THE NEED OF KNOWING AND DISCUSSING INTERNATIONAL METHODOLOGIES ABOUT THE MATTER
- THE NEED OF DEVELOPING A MECANISM SUITABLE FOR BRAZILIAN ECONOMIC, TECHNOLOGICAL AND CULTURAL REALITY.

DEFINITION OF CAPACITY CONCERNING RISK ANALYSIS ACCOMPLISHMENT:

- THE SUBJECT RISK IS AN INDUSTRIAL RESPONSIBILITY.
- TO KNOW AND DEFINE AN INTEGRATED POLICY OF RISK MANAGEMENT THROUGH INFORMATION FROM INDUSTRIES, IS A GOVERNMENT DUTY.

We found out that the english companies have metodologies for the risk analysis, that were established by a certain industry for a certain demand, aim or time. In the same way, did the U.S.A., the Japanese, the Dutch, the Germàn, the French, etc companies. Then, if we have to talk to someone over a matter, we must have a notion of what is going on, to know if the policy adopet in that country to the questions we are elaborating. They may not answer to the local needs, though they are not wrong.

There are also the bad habits. Two large multinational conglomerates, that operate in several states in Brazil,called us and informed us that they are adopting some safety principles more or less according to what we are proposing to the state of São Paulo, and they verified that their specialists, working risks analysis auditing, that the old area managers had acquired certain habits in their activities without noticing them, which together with certain irregularities, could cause great catastrophies. These habits come from the personal experience of each of them. Then, it is vital that we establish estrutctured metodologies that are able to get over these habits - with satisfatory results , without that personal impression that determine our surroundings.

The risk analysis is very complex. Two and a half years ago in the north and northeast of Brazil, two specialists of CETESB presented some papers concerning the risk analysis and accident prevention; and they reached the conclusion that there should be a risk analysis to the installment of an industrial complex. The owner of the industry consulted his engineers . Well, what does the risk analysis answer? He asked, " What Analysis"?. "What Risks"? They repplied: "Well, risk analysis: First it measures so and so, second, it measures such and such, 3rd, 4th, 5th. If somthing happens you do this way, if another thing happens you do that way. Then the owner asked his

employees. "Which is the cheapest and fastest way to have a risk analysis?" - Of Course, that was an expense for the company, and nobody could explain him properly about the matter...Later on, the employs presented him 50kg of paper, with some figures printed on, showing, some 5 deaths/year. Then he asked, How can half a person die a year? And he could not understand a word of the report...

The answer was given: in case of accident what would happen, It was unclear through the method used. That method used was applied by the insurance agencies, to answer the average of the average of accidents, in order to establish the average of the payment of the premium of assurance; both the bigger or the too small accidents did not matter... Then, the answer was the average of the average of 4,000 accidents, occured in the las 50 years...

Then, after a year that investiment was stoppped,the matter returned to the "DESK" of the owner and it was concluded that, what they wanted was an analysis of the probability of occurances through fault tree analysis and event tree analysis consequencies models of the bigger occurances; and then, a safety plan to reduce the risks and an emergency action plan... Another one or two years of studies collec - ting more hundred kg of paper...

"And then?" - Well, now it's done, the way you ordered... " But the number that we reached is good or bad, after all? Half a death is too much or too little? The matter is a little more complicated. It is not the fact of having a risk analysis that we already have the answer to all the problems! It is also important that we know what are the risks index that particular region can bear. And it was found out that the major risks of certain occurances , in that case, came from a neighbour industry... So the other company should also be included in the study, with several projects, layouts, etc. An answer came out: "It will cost million of dollars in order to have all that is needed... "

The company could not afford it. And the final observation was: "There will be X deaths every ten years " and to complete the man adds: "But for God's sake, I will have to pay a fortune and still kill people?"

The correct interpretation of the matter is quite important . And the risk analysis is not the vital thing for the government. Now, important is, of course, the interrelation, the risk management, the whole thing...

ENVIRONMENTAL ACCIDENTS PREVENTION PROGRAM

PURPOSE:

. TO DEVELOP CRITERIA FOR CLASSIFICATION OF THE DANGER OF POTENTIALLY HAZARDOUS SOURCES AND ACTIVITIES.

. TO DEVELOP CRITERIA FOR CLASSIFYING SENSIBLE AREAS.

. TO ELABORATE GUIDES INCLUDING ALL AVAILABLE METHODS, THEIR CHARACTERISTICS AND INTERPRETATION MODELS OF THE RESULTS.

. TO EDIT GUIDES TO ELABORATE RISK REDUCTION PLANS.

. TO EDIT GUIDES TO ELABORATE EMERGENCY RESPONSE PLANS.

. TO QUALIFY AND TO TRAIN STAFF FOR COORDINATING AND INTERPRETING RISK ANALYSIS STUDIES.

Concerning the first objective, a criteria was prepared (it's still being revised); this criteria is planned when we studying certain plant, it will verify which of its units has largest potential generator; from this result we will decide which methods we would appply for identify the risk.We intend to discuss this criteria with ABIQUIM, FIESP, we have been having great experiences with several companies. These cri - teria has been coming out from both international and domestic experiences, as well as from our experience, from the experience of the industries and other state companies. The criteria taking into consideration the toxicity, inflammabili ty and the explosivity. We know that there are other interna- tional criteria (NFRA, US Science Academy, etc). We took the more updated directive concerning legislation for the risks ' and adapted them to the national reality.

The second objective is also complicated. An industry may have some potencial danger in itself; and it will be the same in two plants if the project and the process are the same ; but the probability of desaster occurances and their conse - quences may be varied. The difference between the two installations, in different places, will be the level of consequences.

If there is bigger proximity of the population from plant **A** and smaller proximity from plant **B**; if there is a water mine too close to one of the plant, or hospitals, schools,essential public services, etc... How can we have the same analysis , identification and management of risks pattern for both? We cannot possibly equalize everything, even being strict. It is necessary to establish the differences then...

In the third objective, we collected certain number of methods of risks assessment (eleven methods), translated them, we are bringing consultants from other countries to check whether what have been done is correct.

Concerning the editing of orientation guides, it would be of great importance for us, govenmental tecnitians and industries owners, to achieve a compromised aim:if we are going to reduce the risks of certain process or system, we cannot argue against each other: we must have a criteria to evaluate whether the alternatives are reasonable or not.

Up to the present moment,we have never seen in Brazil, among the plans we had the opportunity to analyse, emergency action plans that were complete. We have seen such plans with a beautiful presentation, with leather cover and golden inscriptions; but their content were somehow doubtful as far as effective answers were concerned.

Many times the community and the government itself have bigger ideas than the reality, or smaller ... We cannot take either excessive nor neglectful attitudes.

Therefore the elaboration of a good emergency action plan , which bigger result is the bigger bennefit, possibly with smaller cost, the risk analysis should take care of all the aspects.

The last objective that you do not see on the transparence is the key point of the matter: trainning government staff, so that we can ask and know how to supply what is asked.

SUPPORTING PROGRAM FOR THE DEVELOPMENT OF PROPOSAL ACTIVITIES

- POLLUTION CONTROL PROGRAM FINANCED BY THE WORLD BANK:

PURPOSE:

TO APPLY THE CLASSIFICATION METHODOLOGY OF THE WORLD BANK TO SPECIFIC SOURCES.

DEVELOPMENT:

THE ELABORATION OF THE WORK SHOULD BE COORDINATED BY A MULTIDISCIPLINED COMMITTEE INCLUDING GOVERNMENT AND INDUSTRIES REPRESENTATIVES.

BEGINNING: MAY/87

ENDING: MAY/89

The world bank has developed guidelines for identifying, analyzing and controlling major hazard installations in developing countries, we are using this methodology and we will applicate in the next two years in industries of Cubatão area.

But for the application of this methodology it is necessary the participation of the engineers of the industries.

Then with this international methodology we will compare and analyse its viablity in Brazilian conditions and with our own criterias.

Now we will see in the next transparence proposals that are aplicable at state level as national level.

PROPOSAL OF A NATIONAL PROGRAM OF ENVIRONMENTAL ACCIDENTS CONTROL AND PREVENTION

. TO DEFINE SOME CRITERIA FOR CLASSIFICATION OF POTENCIAL SOURCES AND ACTIVITIES THAT CAUSE ENVIRONMENTAL ACCIDENTS.

. TO INTRODUCE EVALUATION AND RISK MANAGEMENT CRITERIA IN THE CONTROL AND LICENSE PROCESS OF POTENTIAL SOURCES AND ACTIVITIES THAT CAN CAUSE ENVIRONMENTAL ACCIDENTS.

. TO DEVELOP SOME CRITERIA FOR ELABORATING EMERGENCY RESPONSE PLANS AND CIVIL DEFENSE BASED ON THE CONCEPT AND CRITERION OF ACTUAL RISK.

. TO APPLY CONCEPT OF ACCEPTABLE RISK ON THE POLICY OF SOIL USE AND OCCUPATION INSIDE THE FIELD OF ACTION OF MUNICIPAL AUTHORITIES.

. TO DEVELOP A PROGRAM OF TRAINING AND QUALIFICATION OF STAFF THAT CAN BE COMPATIBLE WITH NEEDS OF EACH REGION OF THE COUNTRY.

. TO SET UP EQUIPMENT DEVELOPMENT SUPPORTING PROGRAM FOR EACH CORPORATION AND NATIONAL ENTERPRISES.

. TO GENERATE A DATA BANK FOR ENVIRONMENTAL ACCIDENTS.

. TO GENERATE A DATA BANK FOR CONTROLLING HAZARDOUS MATERIALS AT NATIONAL LEVEL TAKING INTO ACCOUNT ALL MANUFACTURE, HANDLING AND TRANSPORTATION PHASES.

. TO GENERATE A POLICY OF HAZARDOUS WASTES CONTROL, TREATMENT AND DISPOSAL DERIVED FROM ENVIRONMENTAL ACCIDENTS.

. TO DEVELOP SYSTEMS FOR FILING AND MAPPING POTENTIAL SOURCES AND ACTIVITIES THAT CAN CAUSE ENVIRONMENTAL ACCIDENTS.

. TO GENERATE A NATIONAL DATA BANK FOR EXPERTS AND ACTIVITIES CONNECTED TO THE CONTROL AND PREVENTION OF ENVIRONMENTAL ACCIDENTS.

. TO GENERATE A NATIONAL DATA BANK FOR MATERIALS RESOURCES AND EQUIPAMENT THAT WILL CAN BE USED IN EMERGENCY SITUATIONS.

. TO GENERATE A NATIONAL CENTER FOR STAFF TRAINING FOR THE PREVENTION ACTIVITIES AND ENVIRONMENTAL ACCIDENTS RESPONSE.

The second point is regarding law 5597. The next topic deals with the actual performance over the facts that may be registered, and not the hipothetical probabilities, with low degree of probabilities.

Concerning the necessities of each region of the country, we feel that Bahia, Paraná, São Paulo and Rio de Janeiro have differente aspects concerning the same industrial activities, on the transport of chemical products.We must adapt all these to the preparing of people who will work in this area.

As far as the registration system is concerned, CETESB created a data bank with information, that may be quite important both for the government and the industry. Obviously, there are some confidential problems as well as image problems inserted; and this must be taken into consideration somehow. And con - cerning the registration and control system of dangerous substances, CETESB also created its own data bank, based on dangerous chemical products classified by ONU.We consulted 37 bibliographic sources an condensated the information of each product in the data bank.

The matter should be taken into consideration in such manner to cover the whole country, so that the topics being now discussed in Brasília, mainly about what is circulating in the country: what is being imported, what is being produced and stored, and what passes through a state to another. If an emergency action plan is to be elaborated for a certain motorway, everything that pass through it must be known, in which conditions, etc. The data bank already contains infor - mation of around a thousand products; several industries ' requested our work to prepare specific manuals for their line of products, and we have been succesful. We are now editing this manual, which is quite useful for universities, our ministries and for the industries themselves.

Concerning the release of dangerous residue,it represents a permanent problem for us:Now and then we ask some industries '

to receive these residues to be released, neutralized or temporarily stored, or rather, we have to leave them in the garbage deposit, which is not a very traditional measure.

As far as the government is involved (and this has been motivated by our direction), we must know what we should improve in the prevention and actual performance in case of emergency.

Concerning the specialists, how many times a truck loaded with a certain product overturns, and nobody knows the specialists, who are able to answer to the questions is. Most of the time, the specialist is the one who produces and manipulates the product. For this reason,we are trying to elaborate a cadaster, so that we can have faster and more efficient answers.

The next topic is also important, though we do not often remember it: A truck overturns on a motorway and remain so for two or three days, still loaded with a particular gas and moreover upsetting the usual flux of vehicles, bringing a lot of loss for everyone, for lack of tow-cars, which nobody knows where to find around the area concerned... We have already made a cadaster and are already distributing some application forms and questionnaries, in order to schedule all the resources , according to the answers: Pumps, firehouses, trucks , sand, neutralizers, tow-cars, etc...

STUDIES THAT HAVE BEEN DEVELOPED BY CETESB

" MAJOR METHODS FOR RISK ANALYSIS STUDY "
(HAZOP - FMEA - EVENT TREE - FAULT TREE - PHA, ETC) (MAY/87)

- FIRST PRELIMINARY EDITION OF A "GLOSSARY OF RISK ANALYSIS TERMINOLOGY" (MAY/87)

- CONCLUSION OF THE FIRST PHASE OF THE CRITERIA FOR CLASSIFICATION OF POTENTIALLY HAZARDOUS SOURCES.

- STUDIES FOR THE APPLICATION OF THE WORLD BANK CRITERIA FOR CLASSIFICATION OF POTENTIALLY HAZARDOUS SOURCES.

CETESB

FICHA DE INFORMAÇÃO SOBRE PRODUTO QUÍMICO

NOME DO PRODUTO QUÍMICO

1 – IDENTIFICAÇÃO DO PRODUTO

1.1 - SINÔNIMO (1)	1.5 - CÓDIGO ABNT-ONU (7)
	1.6 - NÚMERO DE RISCO (8)
1.2 - FÓRMULAS QUÍMICAS (1)	
- FÓRMULA MOLECULAR	
- FÓRMULA ESTRUTURAL	
1.3 - FAMÍLIA QUÍMICA (1)	1.7 - CÓDIGO ADR (10)
1.4 - APARÊNCIA GERAL (1)	1.8 - FABRICANTES (3)

2 – MEDIDAS DE SEGURANÇA (1)

2.1 - MEDIDAS PREVENTIVAS IMEDIATAS:

2.2 - EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL - (EPI):

3 – RISCOS AO FOGO (1)

3.1 - AÇÕES A SEREM TOMADAS QUANDO O PRODUTO ENTRA EM COMBUSTÃO:

3.2 - COMPORTAMENTO DO PRODUTO NO FOGO:

3.3 - PRODUTOS PERIGOSOS DA REAÇÃO DE COMBUSTÃO:

LEGENDA: O NÚMERO ENTRE PARÊNTESES INDICA A FONTE BIBLIOGRÁFICA

LAW Nº 1563. LATED FROM 28/03/78

PROHIBITS THE INSTALLATION OF INDUSTRIES THAT PROVOKE ENVIRONMENT POLUTION IN HIDROMINERAL SITES.

LAW Nº 2090. DATED 08/27/79

PROHIBITS THE INSTALLATION AND OPERATION OF HIGH RISK POLLUTION DRAINED BASIN PARANAPANEMA RIVER

LAW Nº 2446 - DATED 09/12/80

LIMITS THE INDUSTRIAL ACTIVITIES IN DRAINED AREAN OF PIRACICABA RIVER

CETESB EDICTS Nº 03. DATED 06/18/82

DECIDES ABOUT THE USE OF BTE OIL (1% OF SULPHUR) IN INDUSTRIES INSTALLED IN CUBATÃO.

EDICT Nº 14806 DATED 03/04/80

CREATES THE CONTROL PROGRAMME OF ENVIRONMENT POLUTION (PROCOP) AND PRONACOP.

LAW Nº 4002. DATED 05/01/84

REGULATES BOUT THE DISTRIBUTION AND COMMERCIALIZATION OF PESTICIDES PRODUCTS AND OTHER BIOCIDES IN THE STATES OF SÃO PAULO.

EDICT Nº 24932. DATED FROM 03/24/86

CREATES THE ENVIRONMENT STATE SISTEM AND CREATES THE ENVIRONMENT DEPARTMENT STATE

SÃO PAULO ENVIRONMENT LAWS

- **LAW Nº 118 DATED 06/29/73**

  AUTHORIZES THE FORMATION OF A SOCIETY, NAMED CETESB - STATE-COMPANY OF TECHNOLOGY OF BASIC SANITATION AND WATERS POLLUTION CONTROL.

- **EDICT Nº 5993 DATED 04/16/75**

  CHANGES THE NAME AND ASSIGNEMENTS OF CETESB

- **EDICT Nº 20.903 DATED 04/20/83**

  CREATES THE ENVIRONMENT STATE COMMITTEE

- **LAW Nº 997, DATED 05/31/76**

  RESOLVES ABOUT ENVIRONMENTAL POLLUTION CONTROL

- **DECREE Nº 8468, DATED 09/08/76**

  APPROVES THE RAGULATION OF THE LAW Nº 997, DATED 05/31/76 THAT DECIDES ABOUT THE PREVENTION AND CONTROL OF ENVIRONMENTAL POLUTION;

- **EDICT Nº 10.755, DATED 11/22/77**

  REGULATS ABOUT WATER RECEPTORS.

EDICT Nº 39 DATED 06/23/86

REGULATES THE AUTHORIZATION FOR WATER USE AS WELL AS LAUNCHING OF PUBLIC DOMAIN OF THE STATE OF SÃO PAULO

LAW Nº 4963 DATED 14/3/86

PROHIBITS THE INSTALLATION OF CHEMICAL INDUSTRIES WITH INFLAM MABLE SUBSTANCES OR EXPLOSIVES AND PRE-MIXED CONCRETE PLANTS, IN THE METROPOLITAN REGION OF SÃO PAULO.

LAW Nº 5597 DATED 6/2/87

ESTABLISH NORMS AND DIRECTIVES FOR THE INDUSTRIAL ZONING IN SÃO PAULO

LAW Nº 5.597 FROM FEBRUARY 6TH, 1987.

ESTABLISHS RULES AND GUIDES FOR INDUSTRIAL ZONE IN SÃO PAULO STATE, AND GIVES RELATED MEASURES

SECTION 1º

CLASSIFY INDUSTRIAL ZONES IN 5 TYPES

1. ZONES OF USE EXTRICTLE INDUSTRIAL TYPE I (ZEI-I)
2. ZONES OF USE EXTRICTLE INDUSTRIAL TYPE II (ZEI-II)
3. ZONES OF USE PREDOMINANT INDUSTRIAL I (ZUP-I)
4. ZONES OF USE PREDOMINANT INDUSTRIAL II (ZUP-II)
5. ZONES OF VARY USE I (ZUD-I)
6. ZONES OF VARY USE II (ZUD-II)

SECTION 5º

AS REGARD INDUSTRIAL LOCALIZATION THEY WILL BE CLASSIFIED IN SEVERAL CLASSIFICATIONS, ACCORDING TO ITS ENVIRONMENTAL RISK LEVEL, IN FOLLOWING TYPES:

I_1 - INSTALLATIONS WITHOUT ENVIRONMENTAL RISK → (ZUD-II)

I_2 - INSTALLATIONS WITH LOW ENVIRONMENTAL RISK = UD I

I_3 - INSTALLATIONS WITH MODERATE ENVIRONMENTAL RISK (ZUP-I)

I_4 - INSTALLATIONS WITH HIGH ENVIR. RISK (ZEI. II

I_5 - INSTALLATIONS AND PETROCHEMICAL COMPLEX, CARBOCHEMICALS AND CLOROCHEMICALS, POWER PLANTS, AND OTHERS NO INDUSTRIAL SOURCES OF HIGH ENVIRONMENTAL IMAPCT OR EXTREME DANGER

(ZEI. 5)

PARÁGRAFO 2 - INSTALLATIONS, ISOLATED OR FORM INTO GROUPS, ALREADY EXISTENT IN INDUSTRIAL ZONE, DETERMINED SECOND THIS LAW, WILL BE SUBMITTED AT SPECIAL CONTROL MEASURES , AND IN CASE MCRE SERIOUS, THEY WILL BE COMPELLED TO REPLACEMENT.

SECTION 6ª

IN ORDER TO INDUSTRIAL CLASSIFICATION OF PREVIOUS SECTION, THE ENVIRONMENTAL RISK IS DEFINED AS THE PROBABILITY OF OCCURENCE OF A CONTRARY EFECT, WITH SOME SERIOUSNESS, AND WILL BE CLASSIFIED ACCODING TO ITS DANGER, HARMFULNESS AND DISTURBANCE.

INDUSTRIAL IMPACT IN ENVIRONMENTAL AND URBAN AREA.

BOOKLET

FEDERAL LAWS ABOUT ENIRONMENT

* ENVIRONMENT NATIONAL POLITIC
* PRESERVATION OF ECOSSISTEMS
* TOXIC SUBSTANCES
* SEA POLUTION
* AIR POLUTION
* NUCLEAR POWER
* INDUSTRIAL PCLLUTION
* NOISE POLLUTION
* SOLID WASTES
* ENERGY
* POLLUTION OF INLAND WATERS
* USE OF URBAN SOIL

INDUSTRIAL POLLUTION

. **LAW Nº 6803, FROM JULLY 2ND, 1980.**

REGULATES ABOUT BASIC GUIDES FOR INDUSTRIAL ZONING IN THE POLLUTION CRITICAL AREAS.

. **LAW Nº 1413, FROM AGOUST 14TH, 1975.**

REGULATES ABOUT ENVIRONMENTAL POLLUTION CONTROL CAUSED BY INDUSTRIAL ACTIVITIES.

. **EDICT Nº 76389, FROM ACTOBRE 3TH, 1975.**

ABOUT CONTROL AND PREVENTION MEASURES OF INDUSTRIAL POLLUTION AND DEFINE THE CRITICAL AREAS OF POLLUTION.

. **EDICT Nº 81107, FROM DEZEMBER 22ND, 1977**

DEFINE ALL ACTIVITIES REGARD AS HIGH INTEREST TO DEVELOPMENT AND NATIONAL SECURITY,

. **RELATED TO SECTIONS 1º AND 2º OF LAW Nº 1413 FROM AUGOUST 14TH, 1975.**

(AS REGARD OPERATIONAL SUSPENSION OF A PLANT, AT FEDERAL LEVEL)

. **EDICT Nº 85206, FROM SEPTEMBER 24TH, 1980.**

COMPRISE AS CRITICAL AREA OF POLLUTION, TEH SOUTH REGION OF SANTA CATARINA.

. **EDICT Nº 85698, FROM FEBRUARY 4TH, 1981.**

ESTABLISH CRITERIA TO REGISTER THE PLANTS THAT PRODUCT ALCOHOL HIDRATED, WITH PRODUCTION CAPACITY UNTIL 5000 L/DAY.

. **EDICT Nº 87000, FROM MARCH 9TH, 1982.**

CREATES INTERMINISTERID COMMITEE WITH AIM OF RECOVERY, ENVIRONMENTAL QUALITY OF CUBATÃO.

. **EDICT Nº 87103 FROM APRIL 19TH OF 1982**

CREATES CLOROCHEMICAL INDUSTRIAL COMPLEX, ESTABLISHES NORMS FOR BOGINNING OF ITS DEVELOPMENT, AND GIVES OTHER PROCEDURES.

. **EDICT Nº 0158, FROM NOVEMBER 3TH, 1980.**

IMPROVES THE NORMS INCLUDED IN THE EDICT Nº 323 FROM NOVEMBER 1978, ABOUT ALCOHAL EFLUENTS OF ALCOHOL DISTILLERY.

. **EDICT Nº 020, FROM APRIL 13TH, 1981.**

HOMOLOGATES THE STANDARDS ESTABLISHED FCR THE PREVENTION AND THE CONTROL OF POLLUTION IN STATE OF SÃO PAULO.