

Evaluation of the Jordanian Environmental Legislations

Ali Al-Zu'bi

Al-Balqa' Applied University, Amman University College,
Amman-11118- Jordan, P.O. Box: 1705

Abstract: The concern and interest in the environmental conservation and protection issues are a consequence of the international industrial development, on one hand and the increasing environmental awareness, on the other hand, which reproduced a tremendous change on the Environmental legislations all over the world and has a positive effect on the environmental situation in our Mediterranean Regional States, or in the Middle East as a whole. A comprehensive review and evaluation for the Jordanian environmental laws and regulations was conducted. Evaluation was conducted on local, regional and international levels. On the local level, the environmental legislations were evaluated in details with relation to its application degree. On the regional level the environmental impact assessment by-law were selected as a comparison example with the Egyptian environmental impact assessment by-law. While for evaluation on the international level, the Jordanian standards for drinking water, wastewater treatment and reuse and ambient air quality were selected and compared with the same international standards. Locally, evaluation results demonstrated that, some of these regulations need to be updated and its enforcement authority should be defined specifically. Regionally, comparing the Jordanian (EIA) by-law with the Egyptian (EIA) by-law show that many articles of this by-law are not enforced and that the Jordanian by-law suffers from generality. While, internationally, the compared Jordanian standards with the same international standards showing that Jordanian standards are in the same level of these international standards and more restricted in some points of its content.

Key words: Jordan • Environment • Legislations • Regional and International

INTRODUCTION

The International industrial developments, on one hand and the increasing environmental awareness, on the other hand, have reproduced a tremendous change on the Environmental legislation's all over the world, resulted in enacting substantial decisions engendered from the Earth-Summit held in Montreal/Canada in 1997. This has positive effect on the environmental situation in our Mediterranean regional states, or in the Middle East as a whole [1].

Thus, concern and interest in environmental conservation and protection issues, publicly and privately and acting for the developing of legislative conventions relevant directly to the basic elements of environment (water, air and soil) have become a great concern, because preserving them protect human race and guarantee a healthy and wealthy environment [2].

In the Hashemite Kingdom of Jordan, a series of legislative environmental laws, regulations and directives and other decisions with standard characteristics have been enacted to deal with the problems that face or encounter environmental preservation with all its elements-and prevent pollution. Such legislations have been issued on a period of time lasted since the early fifties up to the present time. [3].

The ministry of environment (MoE) was established in 2003 with a mandate to maintain and improve the quality of the Jordanian environment by sustaining and conserving Jordan's environment resources and contributing to sustainable development. Environment Protection Law No. 52 of 2006 and regulations: No. 27 of 2005 is the main legal framework for environment protection and management in Jordan. Thus, all public and private branches have to implement and transact: directives, decisions and regulations according to that Law, or else, they would be under the responsibility of civil or criminal charges [4].

Methodology: This study includes and evaluates the environmental legislations on three levels. The local level, where, all Jordanian environmental legislation's that are concerned with the environment and that are related to its basic elements, such as: water, soil, Air and man kind are reviewed and evaluated in details. At regional level, the environmental impact assessment By-law was selected as an example and compared with the Egyptian environmental impact assessment By-law. At the international level, the Jordanian standards for drinking water, wastewater treatment and Reuse and the ambient air quality were selected as an example and compared with the relevant international standards dealing with the same subject [5].

• The evaluation for the above listed stages depended on the following criteria:

- Several workshops and discussion seminars deal with evaluating the environmental laws in Jordan.
- Expert's opinion in this field.
- Site evaluation for the environmental condition in Jordan.

Evaluation for the Jordanian Regulations on Local Level:

Jordanian legislations related to environment were classified into nine categories and dealing with: surface and ground waters; wastewater treatment and reuse; air; land use (soil, farming-areas, gardens and deforestation); housing and settlement; public health; solid waste;

Table. 1: Major Jordanian Environmental Laws, Standards and By-laws [7]

Jordanian Legestlations	Water	Wastewater	Air	Land Use	Housing & Settlements	Public Health	Solid Water	Exterminals & Fertilizers & Chemicals	Noise
LAWS									
Environmental Protection Law No. 12-1995	*		*	*	*		*	*	*
Water Authority Law No.18-1988	*	*							
Jordan Valley Development Law No.19-1988		*		*	*				
Organizing Cities, villages & Buildings Law No.79-1966	*			*	*		*		*
Agriculture Law No.20-1973	*			*		*		*	
Public Health Law No.21-1977		*	*			*	*	*	*
Industrial cities Corporation Law No.59-1985	*		*	*					
Municipalities Law No.29-1955	*	*				*	*		*
Civil Defence Law No.12-1959	*				*		*		
Pharmaceutical Law No.34-1972		*				*	*	*	*
Traffic Law No.14-1984			*					*	*
Nuclear Power Law No.14-1987						*	*		
Natural resources Law No.12-1968				*					
Housing & Urban Development Bank Law No.28-1992				*	*				
Manipulation of Public Properties Law No.17-1974				*	*				
Electricity Law No.10-1996					*				
Crafts & Industries Law No.16-1953						*		*	
Jordan Doctors syndicate law No.13-1972						*			
Jordan Dentist Syndicate Law No.17-1972						*			
Jordan Pharmacist Syndicate Law No.17-1972						*			
Codes & Sales Law No.15-1994						*			
Narcotics law No11-1988	*								
STANDARDS									
Jordanian Standard No.202-1991- Industrial wastewater	*	*				*			
Jordanian standard No.286-1997-Drinking water	*					*			
Jordanian Standard No.287-1982-Drinking water- Methods of sampling	*					*			
Jordanian Standard No.893-1995-Treated Domestic Wastewater	*	*				*			
Jordan standard .983-1995 of Treating wastewater		*							
Jordan standard.73/1990 on Motor Vehicles- gasoline engines			*			*			
Jordanian Standard No.1052-1998-Motor Vehicles-Diesel engines			*			*			
Jordanian Standard No.1053-1998-Motor Vehicles-Diesel engines			*			*			
Jordanian Standard No.1054-1998-Motor Vehicles-Diesel engines			*			*			
Jordanian Standard No.1140-1999-Ambient air quality Standards			*			*			
Jordanian Standard No.1145-1996-Reuse of treated wastewater	*	*	*	*		*			
Jordanian Standard No.1189-1999-Maximum allowable limits of air pollutants emitted from stationary sources			*			*			
Jordanian standard No.2204-1979 - sounds level					*	*			*
BY-Laws									
BY Law for Environmental Impact Assessment	*	*	*	*	*	*	*	*	*
By-Law No.131-1966- Mining			*	*	*				
By-Law No.66-1994-Sewage System		*							
By-Law No.131-1966-Meterology	*								
By-Law No.26-1977- Subsurface Water Control	*								
By-Law No.53-1997-Deligation system and rent public land				*					
By-Law No.19-1981-Buildings & cities organization system				*					
By-Law No.67-1979-buildings sytem&organziation in Amman				*					
By-Law No.64-1974-Protecting public health from smoking						*			
By -Law No.66-1994 for sewage systems	*	*			*	*			

exterminable, fertilizers and chemicals; radiation or radioactivity and noise or tremor [6]. Major environmental laws, standards and regulations are presented in Table (1).

Environmental Legislations Concerning Surface and Ground Water: As water is crucial to human life, man keeps alive depending on it; and because of water shortage in Jordan, the Jordanian legislator has enacted rules and regulations that preserve natural fountains of water and systemize or canonize its usage and has also put down standard specifications for fresh water that's approved of in order to be in touch with public health and safety, that is necessary for clients. [8]

- The implementation degree of those legislations is generally "medium" and can be attributed to the following factors,:
- The weak Governmental-follow ups and control.
- Insufficiency of governmental material facilities or capabilities.
- The absence of future-planning in relation to water-exhausting sectors.
- The weak of public common sense about the water-problem. [9]

Environmental Legislation on Wastewater Treatment and Reuse: Due to the direct negative impact on the environment and Public health, the Jordanian legislator has been fully interested in such topics since 1955 (Municipal law No.29) and up date. Laws, standards and regulations were enacted and directives were added to the standards that systemize, control and organize such topics in a way that keeps health and safety fit. [10]

Environmental Legislation on Air Quality: The application degrees for the legislations related to air quality protection focus on the protection of atmosphere from all kinds of pollution produced by man's daily activities, in general and those produced by industrial activities. [11]

Environmental Legislations on Land Use: For the purposes of attaining the best use of land In Jordan, the Jordan Legislator has jot down eight more principal laws in addition to some more systems to guarantee implementing a wise use of land in a profitable way to its users as well as preserving its Environmental elements. The existent situation of applying laws on all previous situation of suing land in unpractical. [12] This conclusion is built upon the following facts:

- The random urban development on agricultural lands such as in Amman and other major cities in the kingdom through given licenses from governmental agencies to change the land use type from agricultural to residential.
- In order to encourage and enhance the industrial sector, it was accustomed to give industrial licences without regard to the adequacy or convenience of the area for industrial purposes and thus their present and future effects on the environment and on neighbouring communities are of no importance. This condition has founded polluted pitfalls affecting dangerously on environment and on public health.
- The unpractical and randomly application of legislations on the agricultural sector has caused the following dilemmas:
- The excessive exploitation of water for farming purposes especially in non-agricultural lands in many parts of the kingdom, while areas such as Al-Ghor suffer from shortage of water for irrigation in the rural parts of the country, especially Al-Ghor area.
- The no-applications of the basis of modern agriculture that depends on the selection of the suitable and profitable type of yield for proper soil, taking climate and water resources into consideration either in quality or in quantity.

Environmental Legislation's on Housing and Settlements: Considerable part of these legislations are implemented in a medium level, or in a weak-level as Environment is in concern, as most of settlements and housing are located on fertile soil-land that is changed into housed or into commercial sites. Even the limited areas for farming in the Jordan Valley suffer from lack of facilities presented by the Authority of the Jordan Valley and they also suffer from the absence of modern Agricultural Methodlogy which has caused a negative reflection of the social, the economic and the common health status of the residents. It has also caused deterioration in the Environmental situation in those areas. [13]

Environmental Legislation on Public Health: All of the environmental legislation's issued in Jordan since 1950, with all their types have focussed on reserving public health. Each of these legislations has a different method to go along with objectives of the legislation enacted on behalf of it. As far as implementation of these legislations is concerned, their application is, commonly, of medium level because of different reasons here are some of them:

- The articles of public health law need modernizing and specialization as this law has been enacted since 1971.
- Application level of this law is of medium up to good level in Amman, but it has degrees of difference between East Amman and West Amman. As for implementation in other cities of the Kingdom, it is of weak up to medium level. It is certain, that the implementation of this is rather weak among underprivileged communities in the Kingdom because of the redundancy that affects public health in those areas such as toxication and group nutritive poisoning.
- Jordan Environmental law has not been enforced.
- In the medication field, syndicates concentrate on the protection of the rights of their members and ask for more personal privilege and systemizing their profession affairs, more than working on developing health care in the Kingdom.
- The municipal and agricultural laws are very old and they are in need for development and modernization.
- Code and Scales law do not focus sufficiently on matters related to public health.

Environmental Legislation's on Fertilizers, Chemicals and Exterminals:

The Jordan legislator has a great concern in the Environmental effects of all fertilizers, exterminals and chemicals on the elements of Environment, as well as on public health and personal safety. According to this vital interest, there are twenty standards available discussing all the options in this subject matter. [14] According to these standards, here is an outline of the present situation:

- The strict implementation of the manufacturing standards regarding fertilizers and exterminals, either home-manufactured or foreign-made, is valid.
- The scientific context of fertilizers standards is rather weak; the evidence on this is that the required detailed chemical manufacturing composition of these fertilizers is invalid and rather weak. This conclusion is to be applied on phosphates, in particular because phosphate includes uranium and cadmium in its composition. Those two elements are basically dangerous to public health.
- There are no direct and limited information's about the use of fertilizers, As Jordan agricultural sector, in general, suffers from the problem of using excessive quantities of different kinds of fertilizers by farmers without any scientific evaluation of their factual

needs. This status reflects shadows of danger on Environment through polluting the soil itself as well as water natural resources.

- The implementation of the standard No.432-1985 on sampling vegetables and ripe fruits to assess the remaining effect of exterminals is rather weak or doesn't exist at all.

Environmental Legislation's on Radio Activities and Bremor or Noise:

There are certain legislations in Jordan dealing with radioactivities and tremor or noise. As for the special codes for radioactivity, information about it is not available - as so that implementation is barren. While legislations on tremor, we can assume that they are faintly implemented, in general.

Evaluating Jordan Environmental Legislation with Regional Environmental Legislation's:

In order to compare the Jordan Environmental legislation's with regional environmental legislation's, The Jordanian Environmental Impact assessment By-Law No. 37 for the year 2005 was selected to be compared with the Egyptian environmental Impact assessment By-Law, in order to clarify points of differences in Jordan Environmental Legislations.

Jordanian environmental protection law is officially enforced by EIA directorate at the ministry of environment with cooperation with other government organizations.

Jordanian environmental protection law which was issued as Law No.52 for the year 2006 were officially enforced in the year 1995 by declaration No.338 for the year 1995. Where this declaration include the following major points:

- Giving all industrial, commercial and agricultural enterprises a three-year period to upgrade their working conditions to meet the environmental protection law.
- Formulate the technical and administrative skeleton for the Egyptian National protection center.

Table (6) presents a comparison results between these two By-laws.

Evaluating Jordan Environmental Legislation with International Environmental Legislation's:

In this part, The Jordanian standards No.286-1997 for drinking water, No. 202-1991for treated wastewater reuse and No. 1140-1996 for Ambient air quality were selected for

Table 6: Comparison results between the Jordanian and Egyptian (EIA) By-Laws.

Egyptian Environmental Impact Assessment By -Law	Jordanian Environmental Impact Assessment By-Law
Egypt Environmental protection Law is the framework of this system.	The Jordan Environmental protection Law No 52/2006 is the groundwork of this system.
This By-Law depends on the following articles: 19,21,22, 23,70 and 73, it also depends on the follows codes; 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 57, 58, 59, 60.	This By-Law depends on Articles 13 and 25 of Jordan environment protection law no. 52 /2006.
This By-law characterize by its comprehensiveness, which embodies technical and practical details that are necessary to guarantee accuracy to any evaluative study of Environmental impact.	This By-law characterize by its comprehensiveness, which embodies technical and practical details that are necessary to guarantee accuracy to any evaluative study of Environmental impact. Also, it emphasis the public participation in decision making process.
The projects that require EIA study were divided into three lists: •The white list and include Projects with limited environmental impacts •The Gray list and include Project with important environmental impacts. •The Black list and include project with dangerous environmental impacts.	The projects that require EIA study were divided into two groups: •Projects require preliminary assessment. •Project requires comprehensive assessment.
A special evaluation form is used for each above the above list three lists and known as: •Form A for the white list projects. •Form B for the Gray list project. •Form C for the Black list projects.	A standard form is used for all the projects that require environmental assessment and known as preliminary assessment form.
The required processes for conducting the EIA are vary based on the list type under which the project is listed.	The required processes for conducting the EIA are standard by this By- Law.
The content that should be included in each EIA study Varies according to the list under which the project is listed with a special focus on the Black list projects.	The content that should be included in each EIA study are mainly standard.
There is a clear relation between the content of this By-law and the Egyptian Soci-economical Status.	There is a relation between the content of this By-law and the Jordanian Soci-economical Status.
For reviewing purposes this law includes several governmental and nongovernmental organizations each in his field and based on the study subject.	For reviewing purposes this law includes several governmental and nongovernmental organizations each in his field and based on the study subject.

Table 7: Compression example between the Jordanian and WHO standard for drinking water

	Jordanian Standard No.286-1997	WHO Standard -1996
Ph	6.5-8.5	6.5-8.5
TDS	500	1000
T.H	100	500
L.A.S.	0.2	-
NH4	0.5	0.5
Al	0.1	0.2
Mn	0.1	0.5
Fe	0.3	0.3
Cu	1	2
Zn	3	3
Na	200	200
Cl	200	250
SO4	200	250

Table 8: Compression example between the Jordanian, FAO, World Bank standards for Treated Wastewater

Constituent	Jordanian standard No.	FAO standard-1985	World Bank-1998
PH	6-9	6.5-8.4	6-9
TDS	500-2000	450-2000	
BOD	250		50
COD	700		250
TSS	250		50
AS	0.1	0.1	0.1
Cd	0.01	0.01	0.1
Cr	0.1	0.1	0.5
Cu	0.2	0.2	0.5
Fe	5	5	3.5
Pb	0.1		0.1
Hg	0.001		0.01
Ni	0.2	0.2	0.5
Se	0.02	0.02	0.1
Ag	0.3		0.5
Zn	2	2	2
CN	0.1		1
F	1	1	2
Mn	0.2	0.2	
Be	0.1	0.1	

comparison with its international equivalents international standards produced by the World Health Organization (WHO)-1996 for drinking water [15], The FAO,1985 standard for wastewater reuse [16], 1985 & World Bank standard-1998 for wastewater reuse and the. American association for environmental protection (AEP) National ambient air quality Standard-2001 for Ambient air Quality [4]. Comparison results are the following:

With relation to the Jordanian standard No. 286-1997for drinking water and the drinking water standard issued by the WHO-1996, it was clear that the Jordanian standard and to a major extent is a copy from the WHO standard, with some restrictions on some elements that might be of great danger to human health. [17]

- With relation to the Jordanian Standard No.202-1992 for wastewater reuse and Both the World Bank, 1998 and FAO, 1985 standards for wastewater reuse, it was clear that:

- The Jordanian Standard has the general framework of both above-mentioned international standards.
- The Jordanian standard shows more restrictions than the international standards with relation to the concentration of some chemicals that have a direct and dangerous effect on human health such as Mercury, Cadmium, copper and zerniec.
- Regarding the usage of treated wastewater for irrigation, the Jordanian standard is more restricted than the FAO standard with relation of the maximum allowable concentrations

With relation to the Jordanian Standard No 1140 for ambient air quality and the “AAEP” standrad, 2001 in this regard, it was clear that the Jordanian standard is more comprehensive than the international standard. Also the Jordanian is more restricted than the World Bank standard regarding the maximum allowable concentrations.

Element	Jordanian Standard 1140-1996		AAEP National Ambient Air Quality standard-2001 Maximum Limit
	Maximum Limit	Average Time for Measuring	
SO ₂	0.135 ppm	1 hour	
SoO ₂	0.130 ppm	24 hour	0.14 ppm
SO ₂	0.03 ppm	Yearly	0.03 ppm
CO	26 ppm	1 hour	35 ppm
CO	9 ppm	8 hours	9 ppm
TSP	260µg/m ³	24 hour	
TSP	75 mgram	Yearly	
NO ₂	0.21 ppm	1 hour	

Element	Jordanian Standard 1140-1996		AAEP National Ambient Air Quality standard-2001 Maximum Limit
	Maximum Limit	Average Time for Measuring	
NO ₂	0.08 ppm	24 hour	
NO ₂	0.05 ppm	Yearly	0.053 ppm
H ₂ S	0.03 ppm	1 hour	
H ₂ S	0.01ppm	24 hours	
Pb	1 µg/m ³	Seasonally	1.5 µg/m ³
Pb	0.5 µg/m ³	Yearly	
PM ₁₀	120 µg/m ³	24 hours	150 µg/m ³
PM ₁₀	70 µg/m ³	Yearly	50 µg/m ³

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