

The Role of Internal Auditing in Raising the Performance of Institutions and Improving the Environment an Applied Study in one of the Environmental Departments

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The research aims to improve the performance of the services provided by the governmental institutions by focusing on the activities of the environmental departments to determine the extent to which they fulfil their duties towards the citizens, such as their contribution to improving the environment and how to deal with the damage. Because these environmental departments have a role to maintain the general health, natural resource, biodiversity and the extent of their cooperation with parties concerned to protect the environment whether internal or regional. Most countries of the world have taken care of the use of the funds allocated to those institutions and guide them in the service of the objectives set for them and achieve the highest level of efficiency and effectiveness and control the good management of funds used and evaluating its performance through the effective internal auditing system by performing its supervisory role and contributing to the development and improvement of the performance of economic units. The most important conclusions of the research were that the Environment Directorate has not established a mechanism to evaluate its work and the lack of field follow-up of the factories and projects in the governorate to assess the environmental reality and reduce pollution, as well as the lack of control over landfill

sites, wastes and rubbles. The research reached the most important recommendations, including the need for the directorate to establish a mechanism to evaluate its work and field follow-up to factories and projects deployed in the governorate to assess the environmental reality, reduce pollution and coordination with municipal institutions in the governorate to control the landfill sites, wastes and rubbles.

Key words: Internal Auditing, Performance, Institutions

Introduction

The environmental departments of the government institutions perform many tasks, including improving the environment and the extent of their treatment of the damage. Because these departments have a role in the preservation of public health and natural resources and biodiversity and given the importance of these institutions in providing basic services for citizens and the need of those institutions of huge funds to achieve their objectives, the governments of the countries and their people have attached great importance to the good use of these allocated resources and spending them in order to achieve the goals set for them through the role played by the effective internal audit department to manage them with the highest level of efficiency, control the funds used in these sectors and evaluate their performance for the purpose of improving the performance of economic units and raising the efficiency and effectiveness of public services (Fernandes, and Waldir, 2019; Motekoa, and Michael, 2019). As a result of the problems experienced by the environmental sector, which are represented by the lack of environmental protection means, the proliferation of brick factories, cement plants, meat massacres and other projects, which the majority of them lack the determinants and environmental approvals for their work and increase in the number of cars in the governorate and the accompanying emissions of those cars to the atmosphere and thus they cause environmental pollution as well as the lack of control of landfill sites, wastes and rubbles (Nacanieli, and Kerry, 2019). All these resulted in the dissatisfaction of the beneficiaries of the work and activity of the directorate. Therefore, the research consists of four parts. The first part deals with the concept, objectives, characteristics and services of the internal audit. The second part discusses the role of internal auditing in the verification of services provided in the environment departments. The third part describes the practical side. Finally, the fourth part provides the conclusions and recommendations of the research.

Research Methodology

Problem of the research: As a result of the problems experienced by the environmental sector which are represented by the lack of the means of environmental protection, the proliferation of brick factories, cement factories, meat massacres and other projects. The majority of these lack the determinants and environmental approvals for their work and

increase in the number of automobiles in the governorate and the accompanying exhausts emission of them to the atmosphere which causes the pollution to the environment, as well as the lack of control of the places of health landfill, wastes and rubbles (Karwan, et al.2019). All these have led to the citizen's dissatisfaction with the work and activity of the environment directorate as the reality is far from the aspirations of the citizen because we do not find a clear role of internal audit in raising the efficiency of these institutions to diagnose weaknesses and neglect to improve the service provided. Where, the internal audit department did not set a mechanism to evaluate their work and the shortage of field follow-up for factories and projects deployed in the governorate to assess the environmental situation and reduce pollution as well as the lack of control over places of health landfill sites and the activity of some factories and industrial projects and their environmental impact in the governorate.

Importance of the research: Importance of this research is reflected in auditing the activities made by the environmental departments, preparing annual plans for their various activities to increase the effectiveness of the services performed and formulating alternative plans to address the problems facing the implementation of the main objectives.

Objectives of the research: The research aims to:

- a- show the nature of the services provided by the environmental institutions.
- b- focus on the role of internal auditing in evaluating the efficiency and effectiveness of services provided through the development of plans and field follow-up in order to assess the environmental reality and reduce pollution.

Hypothesis of the research: The use of effective internal audit procedures through the development of plans and field follow-up to assess the existing environmental reality and develop it contributes to reducing environmental pollution and identify weaknesses to help management in achieving its goals.

Limits of the research: The research is limited by spatial and temporal limits, which are as follows:

- I. Spatial limits: The research deals with an applied study in one of the environmental departments.
- II. Time limits: The time period 2010-2013 was selected for the research.

The Theoretical Background

The concept, objectives, characteristics and services of internal audit:

The concept of internal audit

Internal Audit Institute (IIA) defined the internal audit as an independent evaluation function established within the economic unit to examine and evaluate its activities, with the aim of assisting the members of that unit to carry out their responsibilities effectively by providing the personnel of the company with recommendations, advice and related information to check activities. Audits objectives also include the availability of effective control with affordable costs, (Lourens, and Philna, 2018).

The International Accounting Standards Committee (ISAC), which is subject to the International Federation of Accountants (IAC), defined internal audit as "the process of evaluating the activities recognized within the unit as a service to it, represented by all its functions, such as the examination, evaluation and monitoring of the efficiency and effectiveness of internal control systems" (Kees and Stephen, 2015; Kettunen, 2017).

Later, the IIA's Working Committee has developed its definition of internal audit as an independent activity and an objective emphasis of an advisory nature aims at adding value to the unit to improve its operations. It also contributes to achieving its objectives through adopting an objective approach to evaluate and improve the effectiveness of risk management, control and process of the institutional control management (Bailey, 2018).

Based on the recent definition presented by the IIA, the internal audit profession needs to re-establish the auditing functions better and focus on the core businesses to help units achieve their business objectives through the role played by it with the participation of unit management in building its formulated strategy to achieve its mission (Pickett, 2019).

Objectives of the Internal Audit: (Asaolu, 2016; Boghean, and Cibotariu, 2018).

- i. Supervision: Adequate internal control should be established by management of economic unit. Internal audit exists for a specific responsibility for the management for the purpose of control and supervision over their operations and provision of the necessary recommendations.
- ii. Discovery of what may be found in the books and records of deliberate or unintentional errors.
- iii. Examination of the financial, operational and non-operational information: This is done by reviewing the means used to identify, measure, classify and report on such financial and non-financial information.
- iv. Minimization of the chances of committing a mistake and cheating because the operations eliminator would feel that what he is doing will be controlled and audited.

- v. Review of compliance with laws, legislations, other external requirements, administrative policies, directives and other internal requirements.
- vi. Assisting in the preparation of plans, monitoring their implementation and evaluating the results of the project in light of the plans.
- vii. Helping to eliminate the excesses in the use of productive resources in the project by analysing the financial statements.

Internal Audit Characteristics : (Ahmed Atef, and Neila, 2018).

- i. Ability to work as partners with management to improve the services provided.
- ii. Its role in the diagnosis of deficiencies and the development of solutions to address them.
- iii. The cohesion and coherence between the law and the objectives on the one hand and between the functions of the Internal Audit Department and the strategic objectives on the other hand.
- iv. Ability to work skilfully and contribute to the major change of the unit.
- v. Understanding and focusing on the job risk management function and the ability to relate it to the priorities of economic units.
- vi. Ability to develop the internal audit process in order to obtain the best services.

Internal Audit Services

Internal Audit offers two types of services:

- i. Advisory services: Units often get help from external audit offices to conduct internal audit operations by contracting with them for the purpose of adding value and improving the company's operations by providing advice and reporting to management and others.
- ii. Confirmation Services: One of the internal audit functions is to evaluate the performance of the functions of internal systems objectively and reliably (, Frank, et al., 2017).

Internal auditing can also provide services such as:

- i. Assisting in the analysis of risk factors.
- ii. Work on analyses of results and provision of guarantees and confirmations.
- iii. Assisting management in giving priority to risk management and control systems, (Joseph V., et al., 2018).
- iv. Performing risk management function and internal control systems (Hopkin, 2018).
- v. Identifying and monitoring risks efficiently and effectively.
- vi. Control the organizational processes in an efficient, influential and effective form.

- vii. The effectiveness of organizational processes in the company concerned (Shamsuddin, et al, 2018; Hopkin, 2018).

Basic Auditing Standards

General Standards: These standards relate to the auditor's personality, scientific and practical qualifications, independence, fairness, and the necessary professional care executed to ensure the necessary competence in the person performing the audit. These include three criteria:

a- Scientific and practical qualification: This criterion implies that the audit process should be made by a person who has scientific knowledge and professional competence which qualifies him to work as an auditor. This criterion means that the auditor should have sufficient practical knowledge in the fields of accounting, taxation, auditing and other areas related to the professional practice. In addition, the auditor should continue to pursue education and training throughout his career to keep abreast of recent developments in these areas and be prepared to acquire knowledge in new areas. The requirements of education vary from one country to another. Most countries require a university degree in accounting and some countries require higher than undergraduate education degree (Diamond, 2002).

b- Independence: This standard requires the auditor to be impartial in the mental direction during all stages of the audit work and adhere to the independence and impartiality to perform the audit function objectively and impartially. Where, the auditor's opinion has no value if it is not independent of the management of the entity subject to audit because of the possibility of a conflict of interest between the auditor and the entity preparing the financial statements. So, it is necessary for the auditor to have independence and neutrality so that there is no personal relationship or interest with that management (Christopher, 2009)

c- Making the required professional care: The third standard includes the need for making the usual professional care in all aspects of the audit. This means that the auditor is professionally responsible for the performance of his work in a serious and cautious manner. The professional care includes aspects such as completeness of work papers, adequacy of audit evidence and the objectivity of the auditor report. The auditor should also avoid the negligence in accomplishing his work (Holmboe, 2019).

Field work standards

- a- Planning and supervision: Planning is considered a continuous, integrated and interrelated process before and during the audit period. It aims to develop a general plan for the scope of the expected audit work and an audit program that determines the nature and scope of the required audit with ensuring that the required changes are made to the plan and programs whenever the working conditions call for it as a result of the emergence of new things during implementation of the work. The direct and

ongoing supervision of assistants and other auditors is also available (Evilina, and Maruf, 2018). After completing the risk assessment and determining scope of the work, the auditor needs to prepare a detailed audit plan for the purpose of performing his work. He also reviews and develops the plan continuously, including the paragraphs to be tested, sample size, etc.

- b- Evaluation of internal audit system: The auditor should study and evaluate the internal audit system to determine scope of the audit process and the extent of texts which should limit the audit process of accounts. The determination of the audit process scope is based on the assessment and personal judgment of the auditor. Whereas, adequacy of the internal audit system requires knowledge and understanding of the adopted procedures and techniques with a reasonable verification that these procedures and techniques are actually applied according to the established plan (Hanskamp-Sebregts, 2018), The auditor performs the compliance tests and the material tests. The compliance tests mean procedures designed to obtain reasonable assurance of actual compliance with the internal control procedures to be relied upon in the audit. While, the material tests are procedures designed to obtain reasonable assurance about the completeness, accuracy and correctness of the data provided by the accounting system. These procedures are of two types:
 - i. Examination of details of operations and balances.
 - ii. Ratio Analysis and important trends in addition to an inquiry about changes and extraordinary items (Mannino, and Robert, 2009).
- c- Obtaining appropriate evidences: Through the implementation of compliance tests and material tests, the auditor must obtain adequate and appropriate evidences to enable him to obtain reasonable and reliable results in expressing his opinion on the financial statements (Rick Elam, and Ahmad Sharbatoghlie, 2001).

Reporting Standards: The auditor's report represents the main material product of the audit. It represents the information reported by him to the majority of users. The American Institution of Certified Public Accountants (AICPA) specified four standards which govern the external audit's report. These are:

- i. The report should indicate whether the financial statements have been prepared in accordance with generally accepted accounting principles.
- ii. The report should clarify whether these principles have been applied during the current period in the same manner as in the previous period.
- iii. The financial statements shall express fairly and appropriately the information contained therein unless the report indicates otherwise.

- iv. The report shall include the auditor's opinion on the financial statements as a single unit or may refrain from expressing an opinion. In this case, the report should include the reasons for this (W. Collins, and William, 2007)

The Role of Internal Audit in the Improvement and Protection of the Environment

The Ministry of Environment Law No. (37) for the year 2008, Article (3) specified the Ministry's objective to protect and improve the environment by removing and remedying the existing damages or the damages which occur and preserving public health, natural resources, biological diversity and cultural and natural heritage. These can be achieved through the cooperation with the parties concerned to ensure the environmental development and the attainment of international and regional cooperation in this area. Therefore, the internal auditor is the one who carries out this task through the development of plans and follow-up to achieve the objectives that should be achieved by units, sections and divisions in the directorate as the auditor collects data and compare them to make sure that the resources were used in a proper manner. The tasks the auditor exercises for the purpose of achieving the objectives are:

- a- Conduct periodic inspections of radioactive sources existed in the industrial enterprise.
- b- Measurement of radioactivity in the atmosphere and give warning when there is an emergency nuclear accident.
- c- Conduct periodic surveys to determine the radiation background of the governorate through several points distributed in it.
- d- Grant licenses for private clinics specialized in the work of medical radiation.
- e- Conduct periodic surveys of the landfill sites in the governorate.
- f- Conduct periodic visits to projects and complexes in the governorate to draw samples of drinking water.

The practical aspect of environmental directorates

A brief description about the Environment Directorate

The Environment Directorate was established under Article (14-First) of the Environment Protection and Improvement Amended Act No.(3) for the year 1997. After that the Coalition Provisional Authority Order No.(44) for the year 2003 was issued, in which the Council for the Protection and Improvement of the Environment was abolished. The Ministry of Environment was formed instead of the Environment Protection and Improvement Directorate. The above mentioned law left the Environment Protection and Improvement Directorates in all the governorate as departments of the ministry until the issuance of the Ministry of Environment Law No.(37) for the year 2008. This law determines the functions and structure of the Ministry of Environment. The Environment Directorate was assigned to

the Directorate of Environment Protection and Improvement in the Middle Euphrates region during a period where the environmental conditions were deteriorating. The Environment Directorate in question consists of (13) sections and (24) units, while the other districts in the governorate lack any of these formations. The work of each section is carried out in order to protect the environment.

Environment Directorate Formations

Urban Environment Section: - This Section undertakes field visits to water projects and complexes, draws samples, conducts bacteriological and chemical tests, examines the free chlorine in water distribution networks, surveys water resources and monitoring air quality, as well as monitoring and following-up the environmental reality of industrial, service and agricultural activities, as follows:

Drinking water control unit: This unit takes samples of the water of the projects and the desalination plants of Al-Muthanna Water Directorate and tests them in the laboratories in the Directorate. Table (1) shows the activity of the section to monitor and evaluate drinking water during the years of research.

Table 1: The activities of the section to monitor drinking water during the years 2010-2013

year	Details	planed	executed	Execution percentage %	Change percentage %
2010	The work of the unit was stopped according to the letter of the Directorate of Health No. (1549) on 19/8/2010	-	-	-	-
2011	Drawing water samples for bacterial examination	480	480	100	-
	Drawing water samples for residual chlorine examination	480	480	100	
	Drawing water samples for the purpose of chemical tests from the network	34	34	100	
	Total	994	994	100	
2012	Drawing water samples for bacterial examination	600	600	100	27
	Drawing water samples for residual chlorine examination	600	600	100	
	Drawing water samples for the purpose of chemical tests from	60	60	100	

	the network				
	Total	1260	1260	100	
2013	Drawing water samples for bacterial examination	480	480	100	(20)
	Drawing water samples for residual chlorine examination	480	480	100	
	Drawing water samples for the purpose of chemical tests from the network	48	48	100	
	Total	1008	1008	100	

* The table is prepared by the researchers based on the data of the Environment Directorate

From the table above it is noted that:

- a- The percentage of implementation of the unit's plan (100%) during the years of research while the unit did not operate during the year 2010
- b- We see a development in the plan prepared and implemented during the year 2012 with a percentage of change (27%) compared with 2011 while the plan prepared and implemented during the year 2013 decreased by 20% compared to 2012

Environmental Impact Assessment Unit: This unit monitors the validity of the sites assigned to the projects from the environmental point of view. The wrong choice of sites has a negative impact on the environment, which leads to damage to public health. Table 2 shows the activity of the unit during the research years:

Table 2: The activity of the units during the years 2010-2013

Year	Details	planned	executed	Execution percentage %	Change percentage %
2010	The validity of projects with the environmental requirements of categories (a and b)	-	60	-	-
	The validity of projects with the environmental requirements of category (c)	-	46	-	
	Polluting activities in the governorate and how to reduce	1	1	100	

	pollution				
	Preparing a database on the locations of major and secondary towers of mobile phones and their compatibility with environmental determinants	1	1	100	
	Total	2	108	5400	
2011	The validity of projects with the environmental requirements of categories (a and b)	-	53	-	41
	The validity of projects with the environmental requirements of category (c)	-	97	-	
	Polluting activities in the governorate and how to reduce pollution	1	1	100	
	Preparing a database on the locations of major and secondary towers of mobile phones and their compatibility with environmental determinants	1	1	100	
	Total	2	152	7600	
2012	The validity of projects with the environmental requirements of categories (a and b)	-	187	-	91
	The validity of projects with the environmental requirements of category (c)	-	102	-	
	Polluting activities in the governorate and how to reduce pollution	1	1	100	
	Preparing a database on the locations of major and secondary towers of mobile phones and their compatibility	1	1	100	

	with environmental determinants				
	Total	2	291	14550	
2013	The validity of projects with the environmental requirements of categories (a and b)	-	69	-	(28)
	The validity of projects with the environmental requirements of category (c)	-	140	-	
	Preparing a database on the locations of major and secondary towers of mobile phones and their compatibility with environmental determinants	1	1	100	
	Total	1	210	21000	

* The table is prepared by the researchers based on the data of the Environment Directorate

From the table above it is noted that:

- a- There were no annual plans to study the validity of the projects that were established with the environmental requirements of categories (a, b and c) during the years of research, so we could not compare the implementation percentage with the established plans of the unit.
- b- No planning and implementation of polluting activities in the governorate and how to reduce pollution during the year 2013.
- c- The planned performance was not compared with the actual performance in 2010 while the percentage of change in implementation of the plan was (41%) and (91%) during the research years 2011 and 2012 respectively, while the percentage decreased to (28%) during the year 2013.

Monitoring and Evaluation Service Activities Unit: This unit takes care of monitoring and following-up the service activities of the landfill sites and meat massacres and follows up the environmental reality in hospitals and agricultural activities in the governorate and the preparation of reports and studies thereon. Table (3) shows the activity of the unit during the years of research:

Table 3: The activity of the unit during the years 2010-2013

year	Details	Planned	Executed	Execution percentage %	Change percentage %
2010	Making field visits to the service activities	72	72	100	-
	Preparing a monthly report on the reality of service activity	9	9	100	
	Preparing a monthly report on the reality of solid waste	9	9	100	
	Annual study on the status of municipal waste and landfill sites	1	-	-	
	Preparing a monthly report on the environmental reality of agricultural activity	9	9	100	
	Total	100	99	99	
2011	Making Field visits	96	96	100	33
	Preparing a monthly report on the reality of service activity	12	12	100	
	Preparing a monthly report on the reality of solid waste	12	12	100	
	Annual study on the status of municipal waste and landfill sites	1	-	-	
	Preparing a monthly report on the environmental reality of agricultural activity	12	12	100	
	Total	133	132	99	
2012	Making field visits	96	96	100	1
	Preparing a monthly report on the reality of service activity	12	12	100	
	Preparing a monthly report on the reality of solid waste	12	12	100	
	Preparing a report on the status of municipal waste and landfill sites	1	1	100	
	Preparing a report on	12	12	100	

	monitoring service activities				
	Total	133	133	100	
2013	Making field visits	72	72	100	(18)
	Preparing a monthly report on the reality of service activity	12	12	100	
	Preparing a monthly report on the reality of solid waste	12	12	100	
	Preparing a report on the status of municipal waste and landfill sites	1	1	100	
	Preparing a report on monitoring service activities	12	12	100	
	Total	109	109	100	

* The table is prepared by the researchers based on the data of the Environment Directorate
It is noted from the table above: -

- a- The percentage of implementation of the plan of the unit amounted to (99%), (99%), (100%) and (100%) during the research years 2010, 2011, 2012 and 2013 respectively.
- b- The unit's plan was not updated during the research years to keep pace with the progress in the field of environmental improvement and protection.
- c- The annual study plan on the reality of municipal wastes and landfill sites during the years 2010 and 2011 was not implemented by the unit.
- d- The number of field visits carried out for the service activities for the years 2011 and 2012 amounted to (96,96) visits compared with the year 2010 of (72) visits, while it decreased to (72) visits in the year 2013.
- e- The percentage of change in implementation of the plan was (33%) and (1%) during the research years 2011 and 2012 respectively, while the percentage decreased to (18%) during the year 2013.

Pollution Sites and Chemicals Management Unit: This units takes care of monitoring and following up the chemical contaminants present in the governorate. Table (4) shows the activity of the unit during the years of research:

Table 4: Activity of the unit during the years 2010-2013

year	Details	Planned	Executed	Execution percentage %	Change percentage %
2010	Monitoring the trading of chemical pesticides	-	17	-	-
	Monitoring oil pollution in the rivers in the governorate	36	36	100	
	Site detection of chemically contaminated sites	-	-	-	
	Total	36	53	147	
2011	Monitoring the trading of chemical pesticides	-	6	-	(49)
	Monitoring oil pollution in the rivers in the governorate	-	21	-	
	Site detection of chemically contaminated sites	-	-	-	
	Total	-	27	-	
2012	Monitoring the trading of chemical pesticides	48	48	100	122
	Monitoring oil pollution in the rivers in the governorate	12	12	100	
	Site detection of chemically contaminated sites	-	-	-	
	Total	60	60	100	
2013	Monitoring the trading of chemical pesticides	12	12	100	(60)
	Monitoring oil pollution in the rivers in the governorate	12	12	100	
	Site detection of chemically contaminated sites	-	-	-	
	Total	24	24	100	

* The table is prepared by the researchers based on the data of the Environment Directorate
It is noted from the table above: -

a- There was no plan for the site detection of chemically contaminated sites during the research years and there was no implementation percentage for it.

- b- A plan to monitor the circulation of chemical pesticides has not been developed during the years 2010 and 2011, although the unit carried out (6,17) cases, during the two years above.
- c- The unit did not plan for all its activities during the year 2011.
- d- The percentage of change in implementation of the plan decreased during the evaluation years 2011 and 2013 where amounted to (49%) and (60%), respectively, while in the year 2012 it increased to (122%).

Air Quality Control Unit: This unit takes care of monitoring the air quality in the governorate and the amount of dust falling. Table (5) shows the activity of the unit during the evaluation years:

Table 5: The activity of the unit during the evaluation years 2010-2013

Year	Details	plane d	execute d	Executio n percenta ge%	Change percenta ge%
2010	Collecting dust samples from monitoring stations in the governorate	27	27	100	-
	Preparing a monthly report on air quality in the governorate	9	9	100	
	Studying molecules airborne or falling dust	1	1	100	
	Total	37	37	100	
2011	Collecting dust samples from monitoring stations in the governorate	36	36	100	32
	Preparing a monthly report on air quality in the governorate	12	12	100	
	Studying molecules airborne or falling dust	1	1	100	
	Total	49	49	100	
2012	Collecting dust samples from monitoring stations in the governorate	36	36	100	73
	Preparing a monthly report on air quality in the governorate	12	12	100	
	Studying molecules airborne or falling dust	1	1	100	
	Monitor various noise sources	36	36	100	

	Total	85	85	100	
2013	Collecting dust samples from monitoring stations in the governorate	36	36	100	16
	Preparing a monthly report on air quality in the governorate	12	12	100	
	Studying of molecules airborne or falling dust	1	1	100	
	Monitoring various noise sources	96	50	52	
	Total	145	99	68	

* The table is prepared by the researchers based on the data of the Environment Directorate It is noted from the table above:

a- Percentage of implementation of the plan during the years of research amounted to (100%) for all activities of the unit with the exception of monitoring the various sources of noise, where the percentage decreased to (52%) during the year 2013.

b- Fluctuation in the percentage of change in the implementation of the plan during the years of research 2011-2013 as it reached (32%), (73%) and (16%) respectively, as well as a rise in the planning of the activities of the unit.

c- A plan has not been established to monitor the various noise sources during the years 2010 and 2011 and there were no implementation percentages about it.

Radioactive Sources Protection Section: This section conducts routine radiological surveys of health institutions and follows up the periodic inspections of radiation field workers and the measurement of radiation background doses for specific sites. Table 6 shows the activity of the section during the years of research:

Table 6: The activity of Radioactive Sources Protection Section during the years 2010-2013

year	Details	Planed	Executed	Execution percentage %	Change percentage %
2010	Radiological field surveys	18	29	161	-
	Collection of environmental samples	24	24	100	
	Total	42	53	126	
2011	Radiological field surveys	36	36	100	28
	Collection of environmental samples	32	32	100	

	Total	68	68	100	
2012	Radiological field surveys	36	36	100	(24)
	Collection of environmental samples	16	16	100	
	Total	52	52	100	
2013	Radiological field surveys	36	36	100	-
	Collection of environmental samples	16	16	100	
	Total	52	52	100	

* The table is prepared by the researchers based on the data of the Environment Directorate
It is noted from the table above: -

a- The percentage of implementation of the plan amounted to (100%) for the activities of the unit during the years of research except for the percentage of implementation of radiological surveys where it amounted to (161%) during the year 2010.

b- The overall planning and implementation of the unit's activities during the year 2011 reached (68) cases compared to the year 2010, while it decreased to (52) cases during the years 2013.

c- The percentage change in the implementation of the plan during the year 2011 reached (28%), while it decreased to (24%) in the year 2012.

Laboratory Analysis Section: This section consists of three specialized laboratories (chemical, biological and bacteriological) and prepares monthly reports on its activities and submits them to the Ministry as shown in Table (7).

Table 7: The activities of Laboratory Analysis section during the years 2010-2013.

year	Details	Annual Plan	Executed over the year	Percentage %
2010	Chemical tests on water samples	-	166	-
	Measuring the amount of suspended material and falling dust in air samples	-	-	-
	Bacteriological analyses on drinking water	-	535	-
2011	Chemical tests on water samples	-	221	-
	Measuring the amount of suspended material and falling dust in air samples	-	-	-

	Bacteriological analyses on drinking water	-	381	-
2012	Chemical tests on water samples	-	209	-
	Biologics analyses	-	18	-
	Bacteriological analyses on drinking water	-	607	-
2013	Chemical tests on water samples	-	284	-
	Biologics analyses	-	8	-
	Bacteriological analyses on drinking water	-	716	-

* The table is prepared by the researchers based on the data of the Environment Directorate
It is noted from the table above: -

- a- A plan for the activities of the section was not prepared during the years of research, so we were not able to compare the implementation percentages with those of the planned performance.
- b- The section has not recorded any reading of the amount of suspended substances and falling dust in the air samples during the years 2010 and 2011, as well as the fact that these analyses were not included during the years 2012 and 2013.

Geographical Information System Section: This section is responsible for the preparation of a database of the directorate's activities and the preparation of environmental maps and the installation of coordinates on them according to the plan set by the Ministry.

Table (8) shows the activities of the section during the years of research.

Table 8: The activities of the section during the years 2010-2013.

Year	Details	planned	executed	Execution percentage %	Change percentage in implementing the plan%
2010	Preparing the database	-	168	-	-
	Preparing the environmental map numbers for the governorate	1	1	100	
	Total	1	169	-	
2011	Preparing the database	-	76	-	(54)
	Preparing the environmental map for the governorate	1	1	100	

	Total	1	77	-	
2012	Preparing the database	-	73	-	(5)
	Total	1	73	-	
2013	Preparing the database	-	45	-	(37)
	Preparing the environmental map for the governorate	1	1	100	
	Total	1	46	-	

* The table is prepared by the researchers based on the data of the Environment Directorate
It is noted from the table above: -

a- The section did not plan for the activity of preparing an information base in the section's annual plan during the years of research, so that the implementation percentage for the above activity could not be measured.

b- The implementation percentage of the activity of preparing the environmental map for the Governorate amounted to (100%) during the research years 2010, 2012 and 2013, while the planning and implementation of the activity during the year 2012 has not been done.

c- The percentage of change in the implementation of the section's activity plan decreased so that it amounted to (54%), (5%) and (37%) during the research years 2011- 2013 respectively.

The availability of alternative plans: The Directorate did not prepare alternative plans prepared in advance to address the problems facing the implementation of the main objectives of the Law of the Ministry of Environment No.(37) for the year 2008.

Management and use of human resources: Below is the permanent staff according to the academic achievement of the directorate's staff during the research years as shown in Table (9).

Table 9: The academic achievement of the directorate's staff for the years 2010-2013.

Year	Educational level				Total (5)	Percentage (2/5)%	Percentage (3/5)%	Percentage (4/5)%
	Higher Diploma (1)	Bachelor (2)	Diploma (3)	Secondary school and below (4)				
2010	-	16	2	5	23	69	9	22
2011	-	17	2	5	24	71	8	21
2012	-	19	6	6	31	61	20	19
2013	2	17	6	9	34	50	18	26

* The table is prepared by the researchers based on the data of the Environment Directorate
It is noted from the table above: -

a- Percentages of the number of the staff who hold bachelor's degrees during the years of research were (69%), (71%), (61%) and (50%) respectively of the total number of staff. And this forms the highest percentage of the staff. While the percentages of the diploma holders amounted to (9%), (8%), (20%) and (18%) respectively for the same years.

b- Percentages of the holders of secondary school or less education certificates during the research years were (22%), (21%), (19%) and (26%) respectively of the total number of staff.

The estimated budget of revenues: Table (10) shows the actual revenues achieved to the directorate during the years of research:

Table 10: The Actual revenues of the directorate for the years 2010-2013

Year	Actual Revenue / IQD	Change Percentage
2010	72, 206,150	-
2011	279,119,850	287
2012	35, 221,950	(87)
2013	57,969, 200	65

* The table is prepared by the researchers based on the data of the Environment Directorate
It is noted from the table above: -

a- The Directorate did not prepare the estimated budgets for the revenues during the research years. Therefore, we were unable to compare the actual revenues achieved with the planned revenues to determine the percentage of implementation between the planned and the actual.

b- An increase in the percentage of change in the actual revenues achieved for the years of research 2011 and 2013 amounted to (287%) and (65%) respectively, while the percentage decreased by (87%) in the year 2012 compared to 2011.

Indebtedness: Table (11) shows the amounts of fines incurred by governorate departments during the years of research.

Table 11: The amounts of fines incurred by government departments during the years 2010-2013:

Year	Total fines (1)	Amounts collected / IQD (2)	Amounts remained / IQD (3)	Percentage 1/2 %
2010	67,901,000	3,901,000	64,000,000	6
2011	270,552,000	9,952,000	260,600,000	4
2012	18,700,000	-	18,700,000	-
2013	51,200,000	4,300,000	46,900,000	8
Total	408,353,000	18,153,000	390,200,000	4

* The table is prepared by the researchers based on the data of the Environment Directorate
It is noted from the table above: -

a- High amounts of fines were imposed on violators of environmental conditions and approvals by the directorate on government departments during the year 2011 which was different from the rest of the research years.

b- Percentages of the amounts collected from the amounts due on violators of the environmental conditions and approvals amounted to (6%), (4%) and (8%) during the research years 2010, 2011 and 2013 respectively and no amounts were collected during the year 2012.

c- The percentage of total fines collected decreased to (4%) during the research years. Therefore, it can be concluded that the points of weakness which have been diagnosed contribute significantly to the reduction of environmental pollution and improve the quality of services provided by them and thus proved the hypothesis that:

"The use of effective internal audit procedures through the development of plans and field follow-up to assess the existing environmental reality and development it contributes to reduce environmental pollution and identify weaknesses to help management achieve its objectives".

Conclusions and Recommendations

Conclusions

a- The Environment Directorate has not prepared the annual plans for its various activities, but a central plan is prepared by the Ministry of Environment and sent to the directorates in all governorates to work according to it. The Environment Directorate has not prepared the alternative plans established in advance to address the problems facing the implementation of the main objectives stated in the Ministry of Environment Law No.(37) for the year 2008.

- b. A plan has not been prepared by the Environmental Impact Assessment Unit to study the delegated authorities of the projects according to the approved categories during the research years.
- c. The Pollution Control and Chemicals Management Unit was not planning for all its activities of during the year 2011, nor has a plan been developed on the site detection of chemically contaminated sites and there was no implementation percentage for them, as well as the non-development of a plan to monitor the circulation of chemical pesticides during the years 2010 and 2011. While the percentage of change in implementation of the plan for the years 2011 and 2013 decreased to (49%) and (60%) respectively.
- d. No established plan for the activities of the Laboratory Analysis section was prepared during the years of research, as well as no reading was recorded for the amount of suspended substances and falling dust in the air samples during the years 2010 and 2011 and the absence of such analyses during the years 2012 and 2013.
- e- The directorate has not established a mechanism to evaluate its work and the lack of field follow-up on the factories and projects in the governorate to assess the environmental reality and reduce pollution as well as the lack of control on landfill sites, wastes and rubbles.
- f - Failure to update the plan of the Monitoring and Evaluation of Service Activities Unit during the years of research to keep abreast of the progress in the area of environmental improvement and protection. The percentage of implementation of the plan of the Air Quality Control Unit during the evaluation years amounted to (100%) for all its activities except monitoring the various sources of noise.
- g - There is no internal control in the directorate, but the process of auditing the expenditure transactions and other matters at the Ministry's headquarters. Also, there is a case of weakness of the procedures of the directorate to collect the amounts of fines due on government departments as a result of violation of the conditions and environmental approvals during the years of research. The percentage of fines collected amounted to (4%) of the total amounts of fines.

Recommendations

- a. The Directorate should prepare annual plans for its various activities in coordination with the Ministry of Environment and prepare alternative plans established in advance to address the problems facing the implementation of the main objectives.
- b. A plan should be established by the Environmental Impact Assessment Unit to study the delegated authorities for the projects according to the approved categories and to seek to avoid the low percentage of change in the implementation of the plan.
- c. Seeking to avoid a decrease in the percentage of change in the implementation of the plan for the activities of the Pollution Assessment and Chemicals Management Unit and to establish a plan for the on-site detection and implementation of chemically contaminated sites.



- d - The need to prepare a plan for the activities of the section of laboratory analyses to compare the implementation percentages with the planned.
- e. The directorate should establish a mechanism to evaluate its work and field follow up of factories and projects in the governorate to assess the environmental situation and reduce pollution and coordination with the municipal institutions in the governorate to control the health landfill sites, wastes and rubbles.
- f. The plan of the Monitoring and Evaluation Service Activities Unit should be updated to keep abreast of the progress in the field of environmental improvement and protection, implementation of the annual study plan on the reality of wastes and landfill sites, study of the reasons for the low percentage of implementation of the plan of monitoring different noise sources in the air quality control unit, and prepare the required reports for the Air Monitoring Station. In addition, there is a need to establish an Internal Control Section in the directorate, as well as to urge the directorate to follow up its procedures by collecting the amounts of fines resulting from government departments which violated the environmental conditions and approvals for the purpose of maximizing its revenues.

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