Atomic Energy Board
of Namibia

Annual Review
2012 / 2013

REPUBLIC OF NAMIBIA

ATOMIC ENERGY BOARD

This Annual Review is submitted to the Hon. Minister of Health and Social Services in accordance with the requirements stipulated in Section 15(5) of the Atomic Energy and Radiation Protection Act (Act No 5 of 2005) and covers the activities of the *Atomic Energy Board* and of the *National Radiation Protection Authority*

Objectives of the Atomic Energy and Radiation Protection Act Act No 5 of 2005

· to minimize the exposure of persons and the environment in Namibia to the effects of harmful radiation

· to ensure that adequate control is exercised over the possession, production, processing, sale, export and import of radiation sources and nuclear material

· to create the necessary mechanisms to facilitate compliance with the obligations of Namibia under international agreements relating to nuclear energy, nuclear weapons and protection against the harmful effects of radiation.

ANNUAL REVIEW

2012 / 2013

Perspective from the Board's CHAIRPERSON

This report marks the start of the *Atomic Energy Board's* (AEB) second term of office. The Board members wish to extend their appreciation to the Minister and his management team for the confidence bestowed upon us on advising the Government on matters relating to radiation sources and nuclear energy.

As a member state of the International Atomic Energy Agency (IAEA), Namibia continues to support the nuclear non-proliferation regime and promote peaceful uses of nuclear energy.

The Fukushima Daichi accident changed the nuclear industry worldwide in 2011. The Board gratefully took notice of the *World Health Organizations* (WHO) and the *United Nations Scientific Committee on the Effect of Atomic Radiation* (UNSCEAR) reports released in 2013, on the outcomes of the health risk assessments done at Fukushima. In spite of a conservative approach, the Reports concluded that the "exposures to the Japanese population were very low, leading to corresponding low risks of health effects in later life". In this regard the Board is glad to inform the Namibian public that the Scientific Committee of the Board has been tasked to conduct a health risk assessment of the potential impact of uranium mining in Namibia. The Board supports information campaigns to ensure that all stakeholders are fully aware of the risks associated with ionising radiation.

The full implementation of the Atomic Energy and Radiation Protection Act was achieved and the *National Radiation Protection Authority* (NRPA) is fully operational. The NRPA conducts multiple inspections every year at all uranium mines and mills to ensure that radiation levels are kept well below regulatory limits, protect workers and the public from other potential hazards, and verify that all activities are environmentally responsible and safe.

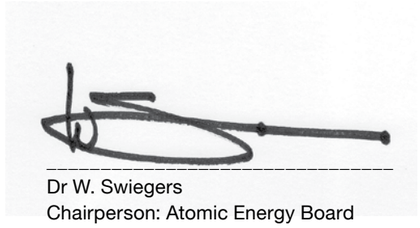
Namibia is guided by international standards and recommendations related to the nuclear and radiation safety regulatory matters. As a member state of the *International Atomic Energy Agency* (IAEA), Namibia continues to support the nuclear non-proliferation regime and promote peaceful uses of nuclear energy. Namibia participated in the IAEA's *Technical Cooperation* (TC) programme, and also implemented eight national projects covering radiation therapy, nuclear medicine, crop production, water resources management and nuclear regulatory infrastructure. Namibia also participated in twenty-seven regional projects covering a wide spectrum of applications of nuclear energy. The current projects continue to focus on crop production, animal health, research in malaria and nutrition as well as teaching of nuclear techniques.

While the Board recognised Namibia's achievements as good progress, it is of the opinion that the current institutional infrastructure and capacities can still be improved upon. Therefor the Board strongly recommends a review of the organisational arrangements and strengthening of the current regulatory practices and capacity.

The Board has an important role to play, in supporting the development of nuclear technology, skills and capabilities The Board continues to nurture, on a collective level, openness, transparency, mutual recognition and respect between generalists and specialists from the different Ministries which constitute the Board. In this regard the cooperation between the Ministry of Health and Social Service and the Ministry of Mines and Energy of Namibia to formulate a National Nuclear Fuel Cycle Policy (with the assistance of the Finnish Government) needs to be applauded. It is pleasing to note that during the past year the consultative process for the finalisation of the Nuclear Fuel Cycle Policy has been concluded.

The Board is now actively working with the Secretariat to establish the necessary policy and strategic links to make nuclear science and technology a competitive and beneficial development for the Namibian nation.

With respect,



Dr W. Swiegers
Chairperson: Atomic Energy Board

Perspective from the Board's SECRETARY

It has been one year since the Atomic Energy & Radiation Protection Act has been fully operational. The National Radiation Protection Authority, as administrator of this Act, seeks to attain the highest possible level of performance in its regulatory work. To do so, it applies international standards and related performance indicators as means of gauging its performance. It is indeed encouraging to note the improvement in the performance of the regulatory activities as summarised in Figure 2 below.

Since the operationalisation and launching of the Act in 2012, the Authority worked with regulated facilities and persons to ensure that the administrative and technical regulatory requirements are complied with. There has been good response from these facilities, with nearly all having fulfilled the administrative requirements. However, there is always room for improvement by ensuring that the technical requirements are fully met, relating particularly to the competency levels of Radiation Safety Officers and some technical areas, thus emphasising the need for training and creating safety and security culture within regulated practices.

The above is not without challenges, as the current capacity and capabilities of both, the Authority and the Secretariat of the Board, is considered inadequate to fulfil its mandate effectively. However, considering the current circumstances, the performance of the staff has been exceptional and commendable. In the meantime progress is underway – in the form of reviewing the organisational arrangements and the capacity of the Authority and Secretariat of the Board in order to create a responsive regulatory capacity.

To conclude, the Ministry is actively seeking to accelerate and enlarge the contribution of nuclear science and technology in the framework of the national development priorities. Therefore, the Secretariat and the Board is working with the Ministry to establish a policy and strategic framework to enable research and development of nuclear science and technology on a sustainable and meaningful scale. This calls for renewed commitment, building of partnerships and resource mobilisation and optimal utilisation of resources in the best interest of Namibia and its people.

National Radiation Protection Authority
REPUBLIC OF NAMIBIA

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Axel Tibinyane
Secretary: Atomic Energy Board

Introduction

The Atomic Energy Board concluded its first term and was re-appointed for the second term, which started in April 2012. The highlight of its first term was the finalisation of the Radiation Protection & Waste Disposal Regulations, which culminated in the full operationalisation of the Atomic Energy & Radiation Protection Act. This development, together with the establishment of both the Atomic Energy Board and the National Radiation Protection Authority, are the basic pillars for regulating the nuclear and radiation-based industry in our country. Now the challenge lies therein, to ensure that the quality of work of both the Board and the Authority is enhanced to a high level of performance.

There are broadly seven thematic areas within the aspects of nuclear and radiation safety and security which include: regulatory infrastructure, occupational radiation protection, medical exposure control, public exposure control, radiological emergency and response, transport of radioactive material and education and training in nuclear and radiation safety. Each of these thematic areas has specific recommendations of performance in order to attain compliance with the international standards. Therefore the assessment of the nuclear and radiation safety infrastructure, which include the activities of the Board and the Authority, is based on these thematic areas as provided in this review.

Technical Programmes

Policy & Legislative Framework

Policy Framework

Approved in 1994, the National Radiation Protection Policy, led to the enactment of the Atomic Energy and Radiation Protection Act in 2005. The Act embodies the scope and purposes of the policy, including the establishment of the Atomic Energy Board and National Radiation Protection Authority. However the current agenda has overtaken the scope of the National Radiation Protection Policy, particularly with regard to the need to enlarge the contribution of nuclear science and technology to national development priorities. In this respect, the Nuclear Fuel Cycle Policy (NFCP) has been developed and awaits final approval. The NFCP includes the promotional aspect associated with nuclear fuel while also extensively articulating Government's position regarding the regulatory aspects. There remains however a gap in terms of providing policy guidance for the development of the activities not included in the NFCP, such as the use of radiation technology and radioisotopes in health, food production, food safety, technical and analytical services, isotopes production, water, and environmental protection - hence the need to prioritise the development of a policy on the non-nuclear fuel cycle activities.

Legislative Framework

The Atomic Energy and Radiation Protection Act was enacted in 2005 and fully operationalised in January 2012. This has indeed been a major achievement during the *National Development Plan III* (NDP III) term. Over the current reporting period the focus was to ensure that facilities and persons involved in the use of nuclear technology and radiation sources, are informed on the requirements and work with the *National Radiation Protection Authority* (NRPA) towards compliance with the provisions of the Act. The NRPA is satisfied that the Act has been fully operationalised and regulatory control is exercised over the full scope of practices, currently regulating 169 facilities. In the upcoming year, public information dissemination needs to be strengthened to improve the coverage and to ensure that no radiological activities take place without having been subjected to regulatory scrutiny under the Act.

One challenge is that the Act established the National Radiation Protection Authority, which currently is not effectively independent. Furthermore there are some activities in the nuclear fuel cycle, which are not adequately addressed in the current legislation. During the current year, consultations have been undertaken with various stakeholders and there is concurrence that an amendment of the Act is necessary to address those aforesaid challenges. Together with these challenges, the promotional aspect needs to be clearly spelled out in terms of mandate and scope.

Regulatory Framework

Concurrent with the commencement of the Act, the Radiation Protection and Waste Disposals Regulations came into effect in January 2012. As is the case with the Act, the focus during the current year was to ensure that these regulations are successfully introduced and awareness is created, while ensuring that all practices work towards compliance with the requirements under these regulations.

Regarding their scope, these regulations cover about 61% of all themes which are necessary for the full scope of regulations as contemplated under the Act. There are still some important regulations that need to be drafted, including those that relate to sources of non-ionising radiation, nuclear security, accounting and control of nuclear material, scale of fees to be paid and decommissioning of facilities and other matters to be prescribed by regulations. Regrettably, little progress has been achieved, mainly due to lack of human resources and technical skills. Therefore efforts must be doubled to expedite the recruitment of staff with the appropriate capacity to facilitate stakeholder consultations and legal drafting.

Regulatory Activities

Codes of Practice / Guidance Documents

The requirements of the Atomic Energy & Radiation Protection Act and that of the regulations are generic in nature and often require further interpretation and clarification, with specific focus on the different practices. Therefore providing guidance to the facilities and the practices forms a key part to ensure that the requirements are understood and applied uniformly across the different technical areas. For this reason the NRPA finalised the following as guidance: (i) Development of a Radiation Management Plan; (ii) Directive for Facilities in the Appointment of Radiation Safety Officers; and (iii) Requirements for a Person who is appointed as a Radiation Safety Officer. The following guidance is currently under development: Regulatory Standards for Technical Service Providers, Guidance on Transport of Radioactive Material, Guidance on the Management of Dosimetry Services, and Code of Practice in Diagnostic Radiology.

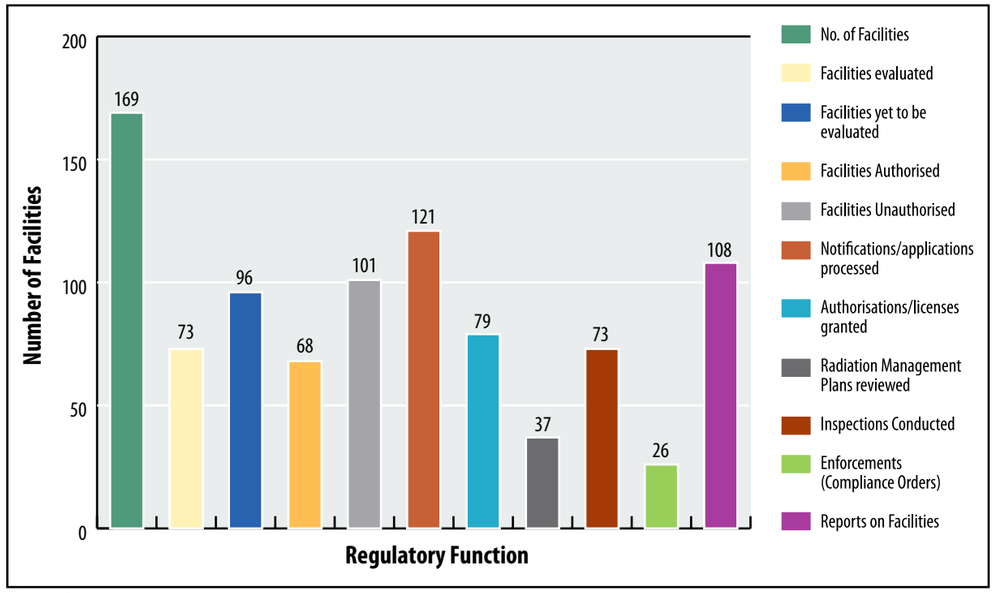


Figure 1

It is equally important that staff of the NRPA apply uniform norms in the conduct of their work and therefore the following two documents have been formulated for guidance: (i) procedures when conducting a compliance assessment and (ii) procedures in preparation for a compliance assurance. There are other pending protocols to be developed including (i) code of conduct of inspectors; (ii) requirements to be met prior to appointment as an inspector; (iii) updated tool for the review and assessment of applications and radiation management plans.

Authorisation & Compliance Assurance

One of the pillars of the work of the Authority includes implementation of the regulatory activities such as notification, registration, licensing, inspection and enforcement in conformity with the *Atomic Energy and Radiation Protection Act and the Radiation Protection and Waste Disposal Regulations of 2012.*

These regulatory instruments have been introduced to facilities and practices, including the operational regime of ensuring compliance. Up to the end of this reporting period 121 applications/notifications have been considered; 73 safety assessments conducted; 37 radiation management plans reviewed; 79 authorisations/registrations and licences granted, while 26 compliance orders have been issued. A further breakdown of the inventory of regulatory activities is presented in Figure 1 above.

The total number of facilities and practises that have been subjected to the full cycle of the regulatory regime stands at 73 of 169 in the current inventory. Seventy percent (51 units) of the 73 facilities were non-compliant, mainly due to not having fulfilled the administrative requirements; while 22 of the 73 were non-compliant due to non-optimal performance of equipment. Subsequently 68 of 73 facilities have been authorised after responding to the non-compliance issues.

The regulatory activities serve as an important measure to assure that facilities using or generating radioactive substances are controlled and the risk is managed in such a way, that people and the environment receive the highest level of protection and safety is maintained at all times.

The NRPA undertakes to increase the coverage of complete assessments to at least 60% by the end of the next financial year. However, it is not only the quantity of assessments that is important, but also

the quality of its regulatory activities, which shall be reviewed and improved based on internationally accepted standards and indicators, which currently stands at 45%, an improvement from 40% recorded in the 2011/12 FY as tabulated in Figure 2 below.

Radiological Emergency Response Capacity

Accidents and even incidents involving radioactive materials have the potential to cause irreversible damage to health and to the environment. It is therefore of utmost importance that emergencies involving radioactive material are prevented at all costs, but should it occur, the response capacity must be such that the consequences are kept to a minimum.

This is one of the reasons why a robust regulatory framework should be in place and also strengthened to prevent the occurrence of an accident. All facilities are obligated to develop their radiological emergency response plan, which includes reasonable description of the potential accident scenarios and how the facility will respond to this. Of the 169 known facilities, 35 of their operations, if an accident involving their radiation sources or radioactive material occurs, may cause significant radiological harm. Thirty-one (31) of the 35 have radiation management in plans, which include their radiological emergency response plans. An in-depth review of the emergency plans of seven (7) of these facilities has been completed, while two plans have been rehearsed with the oversight of the NRPA. This includes an emergency drill, conducted at the Port of Walvisbay in cooperation with Rössing Uranium Mine, Langer Heinrich Uranium Mine and Areva Resources. Some improvements are still required, particularly to ensure that all the plans are rehearsed timely and the affected parties are informed about their roles and responsibilities.

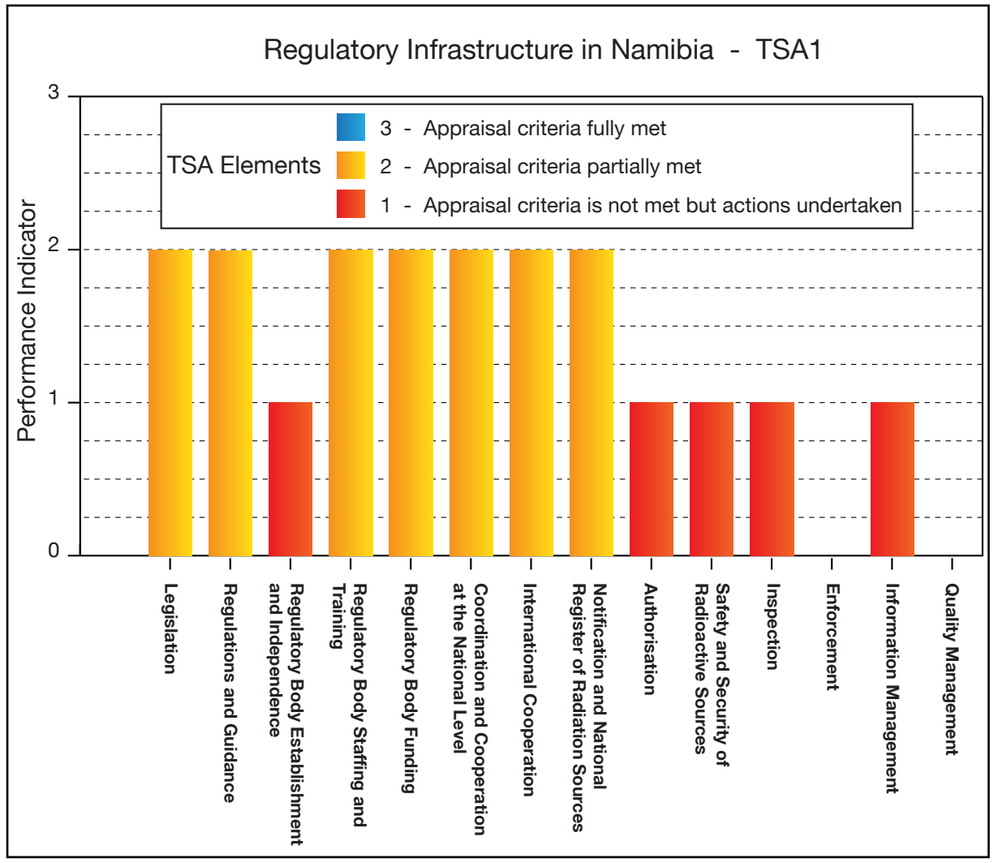


Figure 2

During the reporting period two incidents have been reported to the Authority. In one case a sealed source dislodged from its case, but was successfully brought under control with the highest potential radiation dose estimated to be less than 0.01mSv.

A second case of suspected leakage was reported and the sources were removed from operation and stored in a safe place. In both cases arrangements have been made to return the devices to the suppliers.

An elevated level of radon concentration was reported, which potentially could have caused a dose of 4.5 mSv/a. There has also been a report of 28 mSv exposure, exceeding the dose limit, for which unfortunately the exact cause of the radiation dose could not have been established with certainty.

Transport of Radioactive Material

Due to the potential radiological exposure risk to the population or its impact on the environment, the transport of radioactive material is one of the activities which may pose significant risk, especially in case of an accident. Radioactive materials that are transported through the territory of Namibia on a weekly basis include uranium ore products, sealed sources used in industrial radiography, exploration activities and road construction.

The regulation of these materials is subject to compliance with the IAEA Regulations for the Safe Transport of Radioactive Material, which also has been adopted in the Radiation Protection and Waste Disposal Regulations. All conveyors of radioactive material are required to develop transport plans, which take the hazards, potential accident scenarios and protection measures during transport into account. Furthermore the packaging of the material is subjected to stringent requirements so that the radiation levels are kept to a minimum and the radioactive material is contained, even in case of severe accident scenarios. During the reporting period, 43 authorisation were granted for the transport of uranium ore concentrate and sealed radioactive sources.

One of the important areas of interest is the transport of uranium oxide from Malawi via Zambia and Namibia en-route to the final destinations abroad. The transport is subject to regulatory control including a transport plan that describes the response procedures in case of an accident or incident involving the radioactive material. The onus is on the facilities to ensure that an effective response capacity is in place in case of an emergency situation, while the NRPA is obliged to ensure that this provision is complied with. The transport of uranium oxide via the territory of Namibia was assessed and the transporter has been directed to bring about improvements, especially regarding their emergency response capability.

From the assessment it is estimated that the dose to workers involved in a single shipment could be 4μSv, which may potentially result in an annual dose of 0.5 mSv, which is below the legal limit of 1mSv. This data however will be corroborated with the NRPA's own individual assessment to be completed in the next year.

Scientific Service

One of the duties of the National Radiation Protection Authority is to establish the extent of radiation exposure in Namibia. This includes the assessment of exposure in the environment, exposure of persons occupationally exposed and assessment of patient and public exposures.

Occupational Exposure

An occupational exposure to radiation occurs to those who as a result of the nature of their employment might receive radiation exposure additional to the normal background radiation. They are therefore potentially at a higher risk of exposure than any other person and therefore stringent requirements are necessary to monitor and control their exposure levels. This forms part of the NRPA's regulatory activities to ensure that facilities and exposure of radiation workers are done within the requirements of the law and regulations.

The most significant indicator which is able to provide meaningful information about the level of protection is the actual radiation dose received. Having introduced the new legislative and regulatory regime which also obligates licensees to provide reports of exposure data allows the NRPA to compile and analyse the data, which is summarised below.

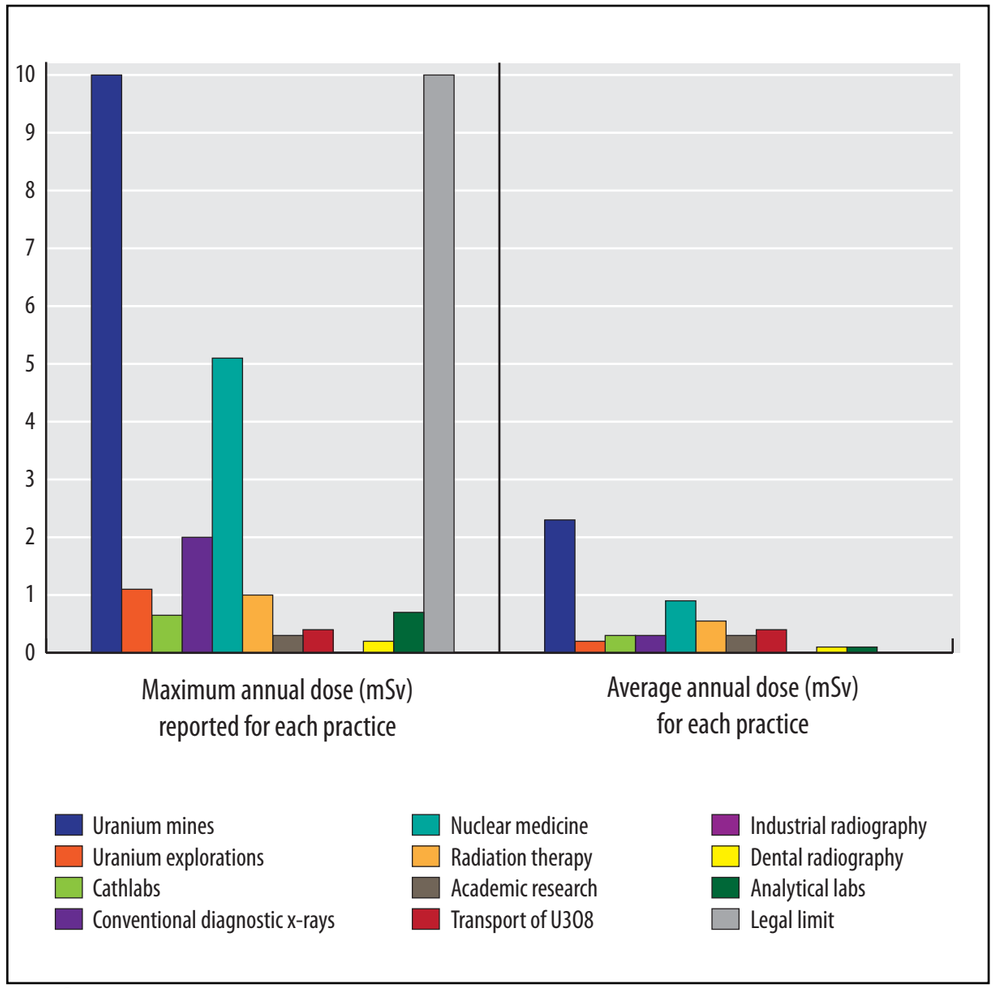


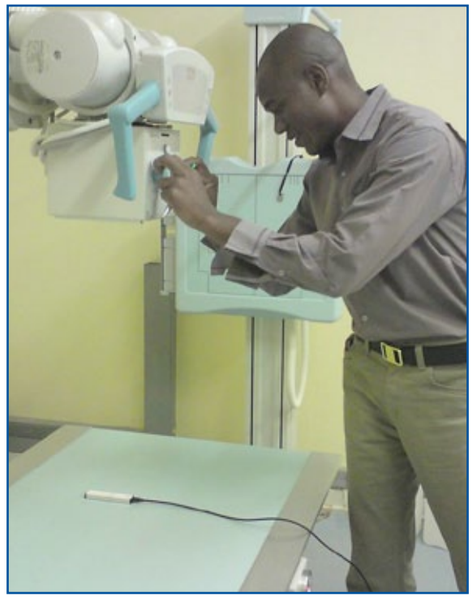
Figure 3

While the legal dose limit for occupational exposure is 20 mSv per annum, any radiation dose even below this limit must be optimised to ensure that it is as low as reasonably achievable, hence the need to strengthen the regulatory activities. There are 180 radiation workers who are monitored under the radiological surveillance services offered by the NRPA's dosimetry services. In addition, 430 workers are monitored by the SABS in South Africa and 10 by Algade in France and 624 by the National Radiation Laboratory in New Zealand. The analysis shows that on average radiation workers received radiation exposures as follows: 2.32 mSv for workers in the uranium mining industry; 0.93 mSv in nuclear medicine; 0.62 mSv in radiation therapy; 0.36 mSv in diagnostic radiology; 0.5 mSv for the transport industry; and 0.22 mSv in the uranium exploration industry. The highest dose recorded is in the mining sector while the average doses in the same sector appears to be higher than in other sectors, thus requiring that greater regulatory attention is paid to the activities in this area.

The future outlook is to strengthen the technical services to confirm the authenticity of the records provided to the Authority while also strengthening the regulatory mechanism to ensure that the reported doses are optimised.

Medical Exposure

The objective of regulating the medical radiological sector is not only for the protection and safety of workers, but also to ensure that patients are not exposed to unacceptable levels of radiation.



The purpose of medical exposure control is to ensure that optimal delivery of treatment and/or diagnosis is achieved, which is beneficial to the patient with minimum radiological hazard. There are various factors that affect the exposure of patients including (i) the optimal performance of equipment which requires conformance with set criteria; (ii) competency of workers entrusted to care for the patient; (iii) the protocols employed in the examination or treatment of patients (examination protocol, exposure charters, radiation management plan). A summary of the performance of these indicators is tabulated on the next page.

While it appears that most of the equipment performs optimally and qualified experts are available, the competency levels in terms of radiation protection do not meet requirements and patient exposure is not assessed. Thus the key priority areas in the forthcoming years should be to establish reference levels and actual exposure that patients receive for the various modalities in order to gauge the performance of the equipment and the patient exposure. Furthermore the experts employed in these facilities must be equipped to improve their knowledge and technical capabilities in terms of patient protection and their own safety.

Facility Type	Number Of Facilities	Percentage Of Facilities			Qualified Experts		
		Perform Equipment Testing		Perform Patient Dose Surveys	Radiologist / Specialists (Certified By Professional Body)	Meet minimum requirement as RSO	Additional training in radiation safety
		New	Routine				
Radiotherapy	1	100 %	100 %	-	100 %	100 %	0 %
Nuclear Medicine	3	-	-		100 %	0 %	0 %
Image Guided Intervention Procedures	4	100 %	-	0 %			
Large Hospitals, with CT, Radiography, Fluoroscopy	4	100 %	75%	0 %	75 %	100 %	0 %
Medium Size Hospitals with Radiography only	28	100 %	60 %	0 %	0 %	100 %	0 %
Small Hospitals with Radiography only	3	100 %	0 %	0 %	0 %	0 %	0 %
Private Medical Facilities	29	100 %	80 %	0 %	100 %		
Dental Facilities Only	46	100 %	80 %	0 %	100 %	100 %	0 %

Public Exposure

The public is exposed to various sources of radiation, some occur naturally in the environment and some due to man-made activities (medical, mining, use of sealed sources in industry, radioisotopes in other practices).

The man-made activities are controlled and subjected to the regulatory activities as described under regulatory activities above and no member of the public should receive a total dose of 1mSv per annum above background as a result of these man-made activities.

The sources of exposure may occur as a result of radioactivity in food, radioactive gas (radon) in enclosed spaces (homes & offices), and occurrence of radiation as a result of cosmic and terrestrial transformation. It is necessary to determine the exposure levels from these sources in various places in order to locate high risk areas and if necessary apply remedial action.

During the year under review, the Authority focused on the determination of radon gas in the main towns of Khomas, Erongo, Otjozondjupa, Oshikoto, Omaheke and Hardap Regions. This is work in progress and will also be supplemented with data from assessment of gamma radiation in the environment.

Part of the study has been completed and the results show that a resident of Windhoek district potentially receives an average exposure equivalent to 1.695 mSv of radiation dose per annum. This includes doses derived from radon concentration and gamma radiation measurements. The final results of average radon gas concentration in houses/office for Windhoek and preliminary results of other towns are presented below for comparison with the action levels proposed by the IAEA and the *International Commission on Radiological Protection* (ICRP).

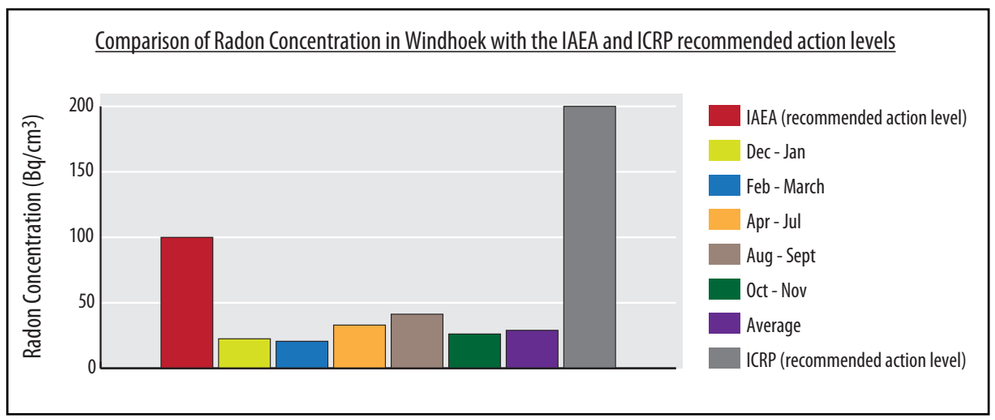


Figure 4

Radioactive Waste Management

Article 95(l) of the Constitution requires that Government provides measures against the dumping or recycling of foreign nuclear and toxic waste on Namibian territory. In this regard the Atomic Energy & Radiation Protection Act, amongst others, prohibits the import, export, disposal, dumping or abandoning of any radioactive material or nuclear material (nuclear waste) unless licensed by the Authority. The ratification of the Treaty of Pelindaba also gave effect to this constitutional requirement which prohibits the parties from taking any action or encouraging the dumping of radioactive wastes (nuclear waste) and other radioactive matter anywhere within the African Nuclear-Weapon-Free Zone.

Sealed sources used in the mining, health and industrial sectors are major sources of radioactive waste. These waste types cannot be disposed of in conventional manner and by its nature should be stored for long periods. Therefore the options in the management of radioactive waste from these sources are (i) to return them to the supplier, (ii) ensure that they are safely and securely stored at the facility, and (iii) are stored at a designated long-term storage site under the control of the Authority.

The current inventory shows that there were 110 sealed sources, which were classified as waste. Out of these 99 have been returned to the supplier and four are safely stored at the facilities and the Authority regularly assesses that the storage of the sources is in compliance with the requirements. It is however also important to setup a national storage facility where radioactive materials, that have been impounded or are not under regulatory control, can be safely and securely kept. The identification of land, feasibilities studies, design of facility and resources mobilisation will form part of this initiative in the forthcoming years.

Stakeholder Collaboration and Coordination

Public Information

The identification of stakeholders and sharing of information serves as a key mechanism to advance the mission of the Board in the areas of regulation of sources of radiation and promotion of the peaceful applications of nuclear technology. Various platforms and tools have been employed as a means of information dissemination and feedback to stakeholders. The stakeholders include the general public, workers, licensees, and policy makers.

Some of the tools deployed and events that took place are the International Seminar on Safety, Security and Safeguards in the Uranium Mining Industry; Annual Report of the Atomic Energy Board for the National Assembly; website of the *Atomic Energy Board*, and various meetings with stakeholders such at the *Nuclear Security Committee and Scientific Committee*.

Public information is an area which by all means should be strengthened to ensure that the public and potential users are informed about the risk of radiation and how to manage such risk. There is also a need to strengthen efforts in terms of creating awareness among partners about the potential beneficial uses of nuclear technology in order to facilitate the integration of nuclear technology for development.

Fourth National Development Plan

The fourth *National Development Plan* (NDP IV) recognizes economic growth, increasing employment and income inequality as overarching goals to be addressed by strengthening the basic enablers (education and skills, health, reduction of extreme poverty, and public infrastructure) and thereby to stimulate and sustain economic growth (logistics and distribution, tourism, manufacturing capability, and agriculture). Nuclear Science and Technology is a competitive, unique and complimentary tool that could strengthen some of these areas, such as the institutional environment for research and development, health, education and skills development, which in turn will contribute to growth of the economic priorities such as agriculture and manufacturing capabilities. For this reason a nuclear science and technology policy is being developed as an initial tool to accelerate and to enlarge the contribution of nuclear technology to national development in alignment with the priority areas identified in the NDP IV.

Cooperation with the International Atomic Energy Agency

The Secretariat of the Board coordinates the implementation of technical cooperation projects with the *International Atomic Energy Agency.* The current areas of cooperation include the use of radioisotopes and nuclear technology in crop production, animal health, ground water studies, nuclear medicine, radiation therapy, nutrition, nuclear and radiation safety, education and skills development. During the period under review, eight national projects were under implementation while Namibia participated in twenty-seven regional projects. The core of the technical assistance is focused on technology transfer and therefore most of the assistance, in addition to equipment, was for the provisions of expert advice and exposing Namibians to various fields of nuclear technology as summarised below.

The total assistance approved under these projects is equivalent to N$ 4 656 363 of which N$ 2 908 677 was utilised during the current year. This financial project implementation rate stood at 62% and is relatively low, which is mainly attributed to the lack of technical skills and local infrastructure to absorb the assistance.

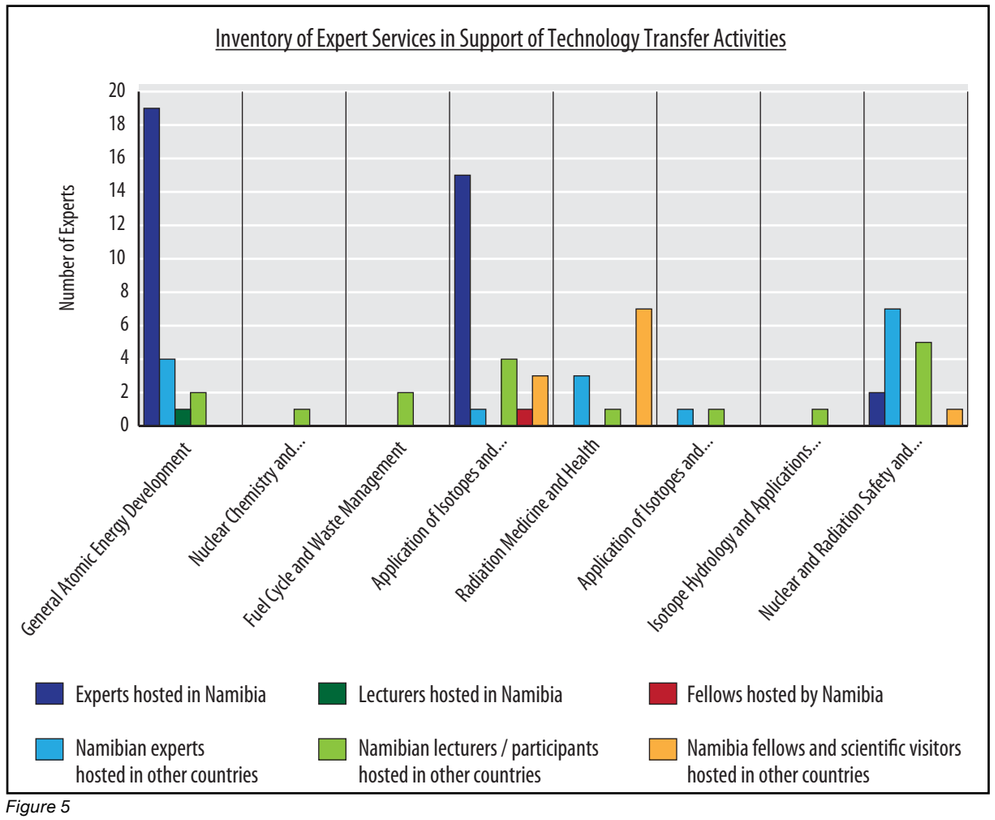


Figure 5

Therefore the focus of the 2013/14 technical cooperation cycle will be directed to assist the institutions of higher learning in the production of skills in the area of nuclear science and technology as a means to promote sustainability. Five project designs have been formulated for the 2014/15 technical cooperation cycle to strengthen the ongoing programme which includes: human resources development, curricula development, crop production, water resource management, nutrition and malaria intervention studies, nuclear medicine, radiation therapy, and animal health.

International Legal Instruments

Article 96 of the Constitution encourages the State to ensure, in its international relations, that it promotes amongst others international cooperation, peace and security, as well as fostering respect for international law and treaty obligations.

There are twenty multilateral agreements, intended to promote international cooperation in the area of nuclear science and technology, nuclear and radiation safety and nuclear weapons. Namibia has ratified seven of these and is non-party to the rest. During the reporting period the focus was on attaining compliance with the obligations made under the Treaty of Pelindaba and Additional Protocol to the Safeguards Agreement, which were both ratified in February 2012. The initial declarations under the Additional Protocol have been submitted, while the routine reporting will commence in the next year. These reports are submitted to the International Atomic Energy Agency as the depository of the Protocol and the IAEA verifies the information by balancing the quantities of nuclear materiel exported and imported by the receiving and dispatching countries for the purpose of detecting any cases of divergence from peaceful uses.

Namibia participated in the Second Conference of Parties of the Treaty of Pelindaba in November 2012. This meeting approved the initial structure of the African Commission on Nuclear Energy (AFCONE), with its headquarters to be based in South Africa. The AFCONE will serve as the technical arm, responsible for the implementation of the Treaty, including to (i) ensure adherence to nuclear non-proliferation obligations; (ii) promote nuclear and radiation safety on the continent; and (iii) to enhance the contribution of nuclear technology for development on the continent.

The future plans will consider the appropriateness of the other international legal instruments to Namibia's situation and, if appropriate, commence with the ratification process, if in the interest of Namibia.

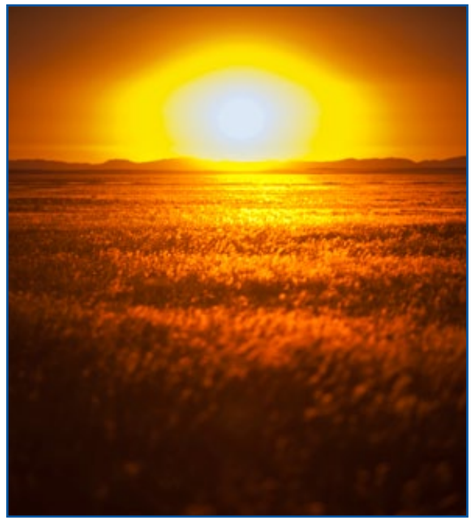
Education and Skills

Education and skills remain a major challenge for Namibia and continue to enjoy high priority as a catalyst for growth and development. Many of the nuclear technology based applications are not growing as desired, neither are they successfully integrated due to a lack of infrastructure and appropriate human resources expertise. The National Radiation Protection Authority as regulatory body for nuclear based technology has some technical skills, but there is room for improving the skills and expertise in specific areas, especially if the national nuclear science capacity is to be expanded.

The Secretariat has engaged institutions of higher learning together with the IAEA, to consider the introduction of nuclear techniques in their teaching curricula, aiming to stimulate interest and facilitate the development of human resources for nuclear technology based applications. A postgraduate diploma in Applied Radiation Science and Technology has been proposed for further consideration by the stakeholders. Further consultations for the development of an MSc Programme in Nuclear Science and Technology, as well as Educational Programmes for Technologist in Radiation Therapy and Nuclear Medicine were initiated, which are subject to further consultations and approval by the relevant authorities.

The preferred qualification of staff in the National Radiation Protection Authority is a minimum of four year B-degree in areas of engineering and or natural sciences with experience and skills in areas relevant to the scope of work of the Authority and the Board. In particular with regard to the regulatory work, an additional qualification and experience in radiation-based applications and radiation protection is desirable. These requirements have been streamlined in a draft document that benchmarks the qualifications, experience and skills required by the staff of the regulatory body.

It is also appropriate to ensure that those who work with radiation sources, or involved in radiation based technologies, have the appropriate competencies to effectively promote radiation safety, nuclear security and protection against radiation within the facilities. Two documents have been issued (i) to direct facilities to employ the services of qualified Radiation Safety Officers; and (ii) to set the minimum requirements that are appropriate for a person who is appointed as a Radiation Safety Officer.

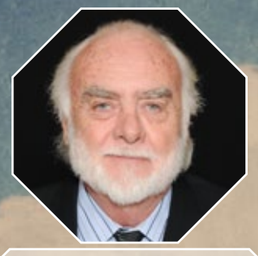


Outlook for the Future

The key priority areas for the future are to strengthen current regulatory infrastructure in terms of the (i) appropriateness of the legislation, (ii) institutional infrastructure, (iii) human resources capacity and skills, and (iv) improving the regulatory activities and processes.

Also part of the strategic initiatives is to develop a policy to consider the enlargement of the contribution of nuclear science and technology to the priority areas in the NDP IV. This will seek to (i) develop a national policy, (ii) develop action plans to support the implementation of the policy, (iii) specifically consider the establishment of a nuclear science and technology centre, (iv) and the supporting infrastructure for successful application of nuclear technology techniques.

BOARD MEMBERS:



Dr. Wotan Swiegers
Chairperson of the Board

Ms. Helena Itamba
nominated by Hon. Minister of Mines and Energy

Mr. Teo Nghitila
nominated by Hon. Minister of Environment and Tourism

Mr. Gerard Theron
nominated by Hon. Minister of Foreign Affairs

Dr. Shitaleni Chocky Herman
nominated by Hon. Minister of Health and Social Service

Mr. Andries Smit
nominated by Hon. Minister of Labour and Social Welfare

Mr. Axel Tibinyane
Secretariat
Director: National Radiation Protection Authority

Ms. Martha Hitenanye
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