

# NON-PROLIFERATION of NUCLEAR WEAPONS & NUCLEAR SECURITY

*Overview of Safeguards Requirements  
for States with Limited Nuclear  
Material and Activities*





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## INTRODUCTION

The International Atomic Energy Agency (IAEA) works to enhance the contribution of nuclear energy for peace and prosperity around the world, while helping to ensure that nuclear material is not diverted to nuclear weapons or other explosive nuclear devices. For the past 40 years, the IAEA has been verifying the compliance of States with their commitment to the peaceful use of nuclear material pursuant to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

The NPT makes it mandatory for all non-nuclear-weapon States to conclude comprehensive safeguards agreements (CSAs) with the IAEA and thus allow for verification through the implementation of IAEA safeguards. In 1997, as part of the IAEA's efforts to strengthen its safeguards system, the Model Additional Protocol was developed to equip the system with better tools to provide assurance about both declared and possible undeclared nuclear activities.

In implementing CSAs and additional protocols (APs), the IAEA cooperates closely with State authorities to verify the non-diversion of nuclear material and the absence of undeclared nuclear material and activities on the territories of the States or under their jurisdiction or control anywhere. Events in recent years have demonstrated the importance of every State participating actively in this work through its designated safeguards focal point.

It is widely recognized that establishing and maintaining effective national controls of nuclear material and nuclear activities is not



*IAEA staff celebrate the awarding of the 2005 Nobel Peace Prize.*

only a legal obligation under the NPT, but is also in the national interest of each State.

A State lacking control of nuclear material and activities may risk becoming the target of non-State actors involved in the proliferation of nuclear weapons technology or in clandestine nuclear related activities. In his Nobel Peace Prize Lecture, the then IAEA Director General, Mohamed ElBaradei, referred to organized crime, terrorism and the spread of weapons of mass destruction as “threats without borders”.

Against this background, it is promising that, in recent years, a growing number of States have concluded NPT safeguards agreements and APs. These are fundamental measures necessary for a higher level of nuclear control. However, it is important that each State also put into place what it needs for the implementation of its safeguards obligations in an effective manner.

Most State parties to the NPT have no nuclear facilities and only limited quantities of nuclear material. For such States, safeguards implementation is expected to be simple and straightforward. This booklet provides an overview of the safeguards obligations that apply to such States. It is hoped that a better understanding of these requirements will facilitate the conclusion and implementation of safeguards agreements and APs, and thereby contribute to the strengthening of the IAEA's safeguards system and of collective security.





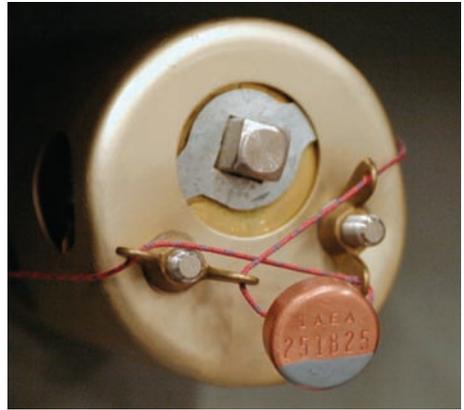
## THE SMALL QUANTITIES PROTOCOL

In order to simplify certain procedures under CSAs for States that have little or no nuclear material and no nuclear material in a facility, the IAEA began making available, in 1971, a 'Small Quantities Protocol' (SQP), which held in abeyance the implementation of most of the detailed provisions of CSAs until such time as the quantities of nuclear material in a State exceeded certain limits or the State had nuclear material in a facility.

Over the past 20 years, the IAEA has been adopting measures to strengthen the effectiveness and improve the efficiency of its safeguards system. As part of this process, the IAEA Board of Governors took the decision, on 20 September 2005, to retain the SQP as part of the IAEA safeguards system, but subject to certain modifications. SQPs now require States to submit initial reports on nuclear material (see Annex I), to inform the IAEA once a decision to build a nuclear facility is taken, and to permit inspection activities. The Board also decided that SQPs would not be made available to States with planned or existing nuclear facilities.

The Board authorized the Director General to conclude with all States with SQPs exchanges of letters giving effect to the modified standardized text and the changed eligibility criteria, and called on the States concerned to conclude such exchanges of letters as soon as possible. The Secretariat is currently in the process of giving effect to the modified SQP text by concluding such exchanges of letters with all States concerned (see Annex III).

At the same time, the Board called on the IAEA Secretariat to assist States with SQPs in developing and maintaining their State systems of accounting for and control of nuclear material.



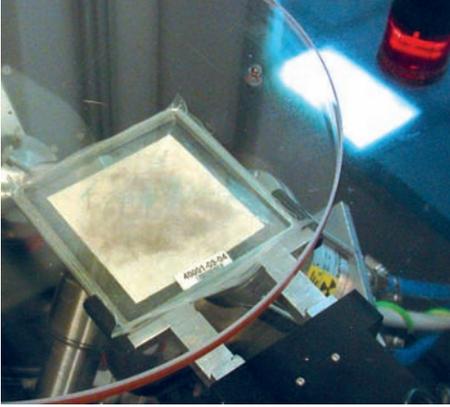
## CONTROL OF NUCLEAR MATERIAL

Each State with a comprehensive safeguards agreement (CSA) is required to establish and maintain a *State system of accounting for and control of nuclear material* (SSAC). SSACs are the State authority, office or persons formally designated to keep track of nuclear material and activities, and to interact with national or international entities (such as the IAEA) on safeguards implementation matters.

It is in each State's domestic interest to designate an authority that exercises oversight and control over any nuclear material and activities on its territory. An effective SSAC contributes to the deterrence and detection of any theft or misuse of nuclear material, thereby contributing to the security of nuclear material and combating illicit trafficking.

Reliable accounting for and control of nuclear material is also fundamental for a State to be able to meet its international nuclear non-proliferation obligations, and provides the basis for the application of IAEA safeguards. The national infrastructure required for IAEA safeguards is essentially the same as that needed to exercise effective national control of nuclear material.

An effective SSAC will require legislation and regulations as well as trained staff. Through its legislative and technical assistance programmes, the IAEA helps States develop the laws and regulations that allow SSACs to collect the relevant information. The IAEA also provides training to State officials responsible for safeguards matters, including those who act as national focal point for the IAEA in this regard.



## WHAT MATERIAL IS SUBJECT TO SAFEGUARDS?

The safeguards system aims at detecting the diversion of the type of nuclear material that could potentially be misused for nuclear weapons purposes. Such material includes enriched uranium, plutonium and uranium-233.

Other types of nuclear material subject to safeguards include natural uranium and depleted uranium, the latter commonly used, for instance, as shielding for radiation sources in hospitals, industry and agriculture. Radioactive sources that do not contain nuclear material are not subject to safeguards and need not be reported to the IAEA under a safeguards agreement.

## REPORTING AND ACCESS REQUIREMENTS

Reporting requirements vary depending on the level of nuclear activity in the country. Some States, even if they have no nuclear facilities, may still have small amounts of nuclear material or may be engaged in any of the following activities: uranium mining; nuclear fuel cycle related research and development; or the production and transfer of specified items. The Appendix outlines the reporting requirements for these States.

States with no nuclear material have minimal requirements, generally consisting of yearly or quarterly 'nil' declarations to the IAEA.

More information on the format for safeguards reporting can be obtained upon request from the IAEA.

As a part of its safeguards activities, the IAEA seeks to verify the correctness and completeness of State reports and declarations. This may include carrying out inspections, if required, of any nuclear material declared by the State. Inspectors may also use 'complementary access' — a tool of the additional protocol — inter alia to confirm the absence of undeclared nuclear material and related activities. However, both inspections and complementary access can be expected to be infrequent in States that have little or no nuclear material and no nuclear facilities.

## APPENDIX

This Appendix provides an illustrative summary of reporting requirements that may apply to States with limited nuclear material or nuclear activities that need to be reported to the IAEA, as set out in each State's NPT safeguards agreement and additional protocol (AP)<sup>1</sup>.

Further guidance on reporting under APs is also given in the document *Guidelines and Format for Preparation and Submission of Declarations Pursuant to Articles 2 and 3 of the Model Protocol Additional to Safeguards Agreements*, which can be obtained from the IAEA.

### SMALL AMOUNTS OF NUCLEAR MATERIAL

States that do not have any nuclear facilities may still use small amounts of nuclear material (see the box on page 9). The most commonly used nuclear material is depleted uranium, often used as shielding for radiation sources used in hospitals. Small amounts of nuclear material may also be found in universities and well drilling operations.

Under CSAs, States are required to declare the types and quantities of material subject to safeguards in an *initial report on nuclear material* (see Annex I). Any subsequent import or export of nuclear material (e.g. depleted uranium) is also to be reported; this may be done in a consolidated annual report.

Additional protocols require that State Parties provide the IAEA with an *initial declaration* that should include a description of the locations where such material is customarily used (LOFs — see the Glossary). Such declarations should also contain information about any nuclear fuel cycle related activities carried out in the country, i.e. uranium mining, nuclear fuel cycle related research and development, and production and transfer of specified items

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<sup>1</sup> Such safeguards agreements and APs are based on documents INFCIRC/153 (Corr.) and INFCIRC/540 (Corr.), both of which are available on the IAEA's public web site (<http://www.iaea.org/Publications/Documents/Infcircs/index.html>).

(see below). Updates to AP declarations are to be provided to the IAEA on a yearly or quarterly basis.

#### MINING ACTIVITIES

Some States with little or no nuclear material may have active or closed down uranium mines. Under APs, States are required to provide information specifying the location, operational status, and the current and estimated annual production capacity of uranium mines and concentration plants and thorium concentration plants for the State as a whole. Mines no longer in operation need to be reported as 'closed down', but uranium ore deposits that are not exploited do not need to be reported to the IAEA. Any export or import of source material such as yellowcake needs to be reported to the IAEA under CSAs. As mentioned above, this may be done in a consolidated annual report.

#### RESEARCH AND DEVELOPMENT

Under APs, States that conduct nuclear fuel cycle related research and development activities *not involving nuclear material* are required to provide a general description of those activities, even if such activities are not funded, specifically authorized or controlled by, or carried out on behalf of the State. Examples would include research on the enrichment of uranium or reprocessing of spent fuel. However, it is not necessary to report basic or theoretical research, or research in the industrial, medical, agricultural or environmental areas.

#### PRODUCTION AND TRANSFER OF SPECIFIED ITEMS

Pursuant to APs, States are requested to report to the IAEA any activities, either on a pilot or industrial scale, related to the manufacture of the safeguards relevant items specified in Annex I of the AP. Annex II of the AP contains a list of specified equipment and non-nuclear material, the export of which must be reported to the IAEA on a quarterly basis. Upon specific request by the IAEA, the importing State is required to confirm the receipt of such items. Should there be no exports, a 'nil' report to the IAEA is still required.

## GLOSSARY

**additional protocols (APs).** Protocols designed to strengthen the effectiveness and improve the efficiency of the safeguards system as a contribution to global nuclear non-proliferation objectives. Additional protocols equip the IAEA with better tools to provide assurance of the non-diversion of declared nuclear material and the absence of undeclared nuclear material and activities.

**comprehensive safeguards agreements (CSAs).** Agreements between States and the IAEA for the application of safeguards on all nuclear material in all peaceful nuclear activities in a State.

**facility.** A reactor, critical facility, conversion plant, fuel fabrication plant, reprocessing plant, isotope separation plant or separate storage installation; or any location where nuclear material in amounts greater than one effective kilogram is customarily used.

**location outside facilities (LOFs).** Any installation or location, which is not a facility, where nuclear material is customarily used in amounts of one effective kilogram or less. States are required to report any such LOFs. The area delimited by the State for the purpose of providing the IAEA with the information on LOFs is referred to as a 'site' under APs.

**NPT.** The 1968 Treaty on the Non-Proliferation of Nuclear Weapons, to which a vast majority of States are party, requires inter alia all non-nuclear-weapon State Parties to conclude a comprehensive safeguards agreement with the IAEA.

**nuclear material.** Any source material or special fissionable material that is the subject of safeguards agreements.

**small quantities protocols (SQPs).** Protocols designed to facilitate the implementation of CSAs for States that have little or no nuclear material and no existing or planned nuclear facilities.

**SSAC.** State system of accounting for and control of nuclear material.

# ANNEX I

## FORM FOR THE INITIAL REPORT ON NUCLEAR MATERIAL SUBJECT TO SAFEGUARDS

NOTE: *If a State has zero quantities of nuclear material and no facilities, it needs to inform the IAEA accordingly. This can be done through a short note that should be sent to the IAEA. In such a case, this report on nuclear material would not be required.*

REPORT ON NUCLEAR MATERIAL								
Name of location:				Visiting address:				
Geographical location:				Mailing address:				
Owner/Operator:						Page No.    of pages		
Accountancy and control procedures:								
ENTRY No.	GENERAL DESCRIPTION AND USE OF THE MATERIAL	NUMBER OF ITEMS	ACCOUNTANCY DATA					
			TYPE OF MATERIAL	ELEMENT CODE	WEIGHT OF ELEMENT	UNIT (kg/g)	Only for ENRICHED URANIUM	
							URANIUM ENRICHMENT (% of U-233 or U-235)	ISOTOPE TYPE
(1)	(2)	(3)	(4)	(5)			(6)	
1								
2								
3								
...								
...								

**Explanations:**

- (1) General description of the use of the material and its use (for example, depleted uranium for radiation shielding; small samples used for calibration in a physics laboratory). If possible, include serial numbers or other identifying information.
- (2) Number of individual items. If the material is in bulk form or number not meaningful, leave blank.
- (3) This should indicate the physical (solid/gas/liquid/sealed source) and chemical (element/compound) forms of the material.
- (4) D (depleted uranium) or N (natural uranium) or E (enriched uranium) or P (plutonium) or T (thorium).
- (5) Weight should be provided to the highest level of precision available, and at least to the nearest gram for E or P or to the nearest kg for D, N or T.
- (6) U-235 or U-233 or both (U-235 + U-233). Leave blank if unknown.

## ANNEX II

### LIST OF STATES WITH SMALL QUANTITIES PROTOCOLS

(\*: SQPs not yet in force)

Afghanistan	Grenada	Papua New Guinea
Andorra	Guatemala	Paraguay
Angola	* <i>Guinea</i>	Qatar
Antigua and Barbuda	Guyana	Rep. of Moldova
Azerbaijan	Haiti	Rwanda
The Bahamas	Holy See	Samoa
Bahrain	Honduras	San Marino
Barbados	Iceland	Saudi Arabia
Belize	Jordan	Senegal
* <i>Benin</i>	Kenya	Seychelles
Bhutan	Kiribati	Sierra Leone
Bolivia	Kuwait	Singapore
Brunei Darussalam	Kyrgyz Republic	Solomon Islands
Burkina Faso	Laos	St. Kitts and Nevis
Burundi	Lebanon	Saint Lucia
Cambodia	Lesotho	St. Vincent and the Grenadines
Cameroon	Madagascar	Sudan
* <i>Cape Verde</i>	Malawi	Suriname
Central African Republic	Maldives	Swaziland
Chad	Mali	The FYR of Macedonia
Comoros	Mauritania	* <i>Timor-Leste</i>
* <i>Congo, Republic of</i>	Mauritius	* <i>Togo</i>
Costa Rica	Monaco	Tonga
Croatia	Mongolia	Trinidad and Tobago
* <i>Djibouti</i>	Montenegro	Tuvalu
Dominica	Mozambique	Uganda
Dominican Republic	Myanmar	United Arab Emirates
Ecuador	Namibia	U.R. of Tanzania
El Salvador	Nauru	* <i>Vanuatu</i>
Ethiopia	Nepal	Yemen
* <i>Equatorial Guinea</i>	New Zealand	Zambia
Fiji	Nicaragua	Zimbabwe
Gabon	Oman	
Gambia	Palau	
	Panama	

## ANNEX III

### MODEL SQP RESPONSE LETTER

On 20 September 2005, the Board of Governors authorized the Director General to conclude with all States with SQPs exchanges of letters giving effect to the modified standardized text of the SQP. Letters initiating such exchanges were sent by the Secretariat to all States with SQPs in December 2005. These exchanges of letters will enter into force on the day the IAEA receives the response letter from the States concerned. The following model may be used as a basis for such a response letter.

(Place and date)

I have the honour to refer to the IAEA's letter of (date) which reads as follows:

[transcription of the letter (in italics)]

In this regard, I am pleased to inform you that the Government of (State) accepts the aforementioned terms.

(signed by)

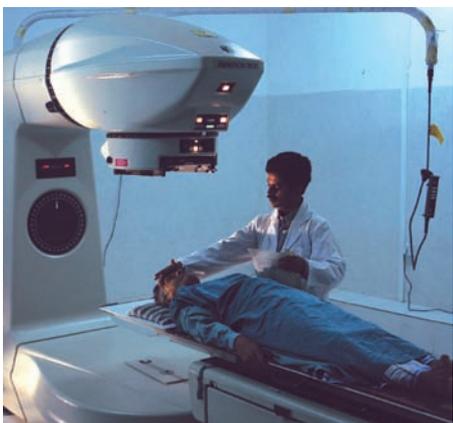
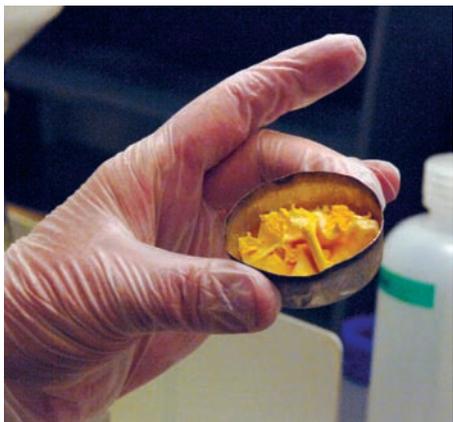
*Head of State, Head of Government  
or Minister of Foreign Affairs*



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