



# **Country Waste Profile Report for BRAZIL Reporting Year: 2005**

*For guidance on reading Country Waste Profile Reports,  
please refer to the following internet based document:*

*<http://www-newmdb.iaea.org/help/profiles9/guide.pdf>*

*For further information, please contact the Responsible Officer via e-mail:  
[NEWMDB@IAEA.org](mailto:NEWMDB@IAEA.org)*

## Waste Classification Schemes

Country: BRAZIL

Reporting Year: 2005

Waste Class Matrix: **IAEA Def.**

This country does use the IAEA Scheme: No

Description: The Agency's standard matrix

| Waste Class Name | Distribution % |       |       |       |
|------------------|----------------|-------|-------|-------|
|                  | VLLW           | LLW   | ILW   | HLW   |
| VLLW             | 100.0          | 0.0   | 0.0   | 0.0   |
| LLW              | 0.0            | 100.0 | 0.0   | 0.0   |
| ILW              | 0.0            | 0.0   | 100.0 | 0.0   |
| HLW              | 0.0            | 0.0   | 0.0   | 100.0 |

Comment **# 383: Usage Specification**

Usage is specified in the brazilian standard

Norma Técnica CNEN-NN-6.09 "Critérios de Aceitação para Deposição de Rejeitos Radioativos de Baixo e Médio Níveis de Radiação", approved on september 23rd 2002

**Definition of «unprocessed waste» and «processed waste»:**

This country uses the IAEA standard definition:

|                    | as-generated waste | processed for handling | processed for storage | processed for disposal |
|--------------------|--------------------|------------------------|-----------------------|------------------------|
| Inprocessed means: | x                  |                        |                       |                        |
| Processed means:   |                    | x                      | x                     | x                      |

## Groups Overview

Country: BRAZIL

Reporting Year: 2005

|                           |                                      |
|---------------------------|--------------------------------------|
| <b>Reporting Group:</b>   | <b>CNEN</b>                          |
| Inventory Reporting Date: | December 2005                        |
| Waste Matrix Used:        | IAEA Def.                            |
| Description:              | Comissão Nacional de Energia Nuclear |

| Site Name | Facility Name | Facilities Defined |         |          |
|-----------|---------------|--------------------|---------|----------|
| CDTN      | CDTN_STR      | processing         | storage |          |
| CRCN-CO   | GCC           |                    |         | disposal |
|           | GR            |                    |         | disposal |
| IEN       | IEN_STR       | processing         | storage |          |
| IPEN      | IPEN_STR      | processing         | storage |          |

|                           |                              |
|---------------------------|------------------------------|
| <b>Reporting Group:</b>   | <b>ETN</b>                   |
| Inventory Reporting Date: | December 2005                |
| Waste Matrix Used:        | IAEA Def.                    |
| Description:              | Eletróbrás Termonuclear S.A. |

| Site Name | Facility Name | Facilities Defined |         |  |
|-----------|---------------|--------------------|---------|--|
| Angra I   | Facility 1    | processing         |         |  |
| Angra II  | Facility 2    | processing         | storage |  |
| DIRR      | Facility 3    |                    | storage |  |

## Site (Structure) : CDTN

Country: BRAZIL

Reporting Year: 2005

Full Name: Centro de Desenvolvimento da Tecnologia Nuclear

Description:

Official Website:

License Holder(s): certified facility (safety assessment required)  
Operating organization:  
Centro de Desenvolvimento da Tecnologia Nuclear  
Rua Prof. Mário Werneck s/nº  
Belo Horizonte - MG - Brasil  
CEP 30123-970

Waste management facilities that are located at this site:

## Site (Structure) : CDTN

Country: BRAZIL

Reporting Year: 2005

|                     |  |
|---------------------|--|
| <b>Facility:</b>    | <b>CDTN_STR</b>  |
| <b>Description:</b> | cementing laboratory for immobilizing radioactive liquid waste and testing product quality, bitumization laboratory for tests and a compression equipment for compressible wastes. One hot cell for the dismantling of lightning rods. |

**Storage part of facility CDTN\_STR**

The following shows storage status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | Yes     |
| ILW         | Yes    | Yes     |
| HLW         | No     | No      |

|                   |     |
|-------------------|-----|
| <b>List SRS?</b>  | Yes |
| <b>List UMMT?</b> | No  |

|                  |  |
|------------------|--|
| <b>Capacity:</b> | CONCRETE SILO WITH 5.048 SPENT SOURCES AND A TOTAL VOLUME OF 97.3 CUBIC METERS AND A TOTAL ACTIVITY OF 7,6 TBq |
|------------------|--|

## Types of Storage Units

| Storage Unit Name | Type Name | Year Opened | Closed? | Full? | Modular? | Contains SRS? |
|-------------------|-----------|-------------|---------|-------|----------|---------------|
| STR_1             | building  | 1970        | No      | No    | No       | Yes           |

**Processing part of facility CDTN\_STR**

The following shows processing status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | Yes     |
| ILW         | Yes    | Yes     |
| HLW         | No     | No      |

|                     |                         |
|---------------------|-------------------------|
| <b>Type:</b>        | Treatment, Conditioning |
| <b>Year opened:</b> | 1970                    |

## Site (Data) : CDTN

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Site Name:** CDTN

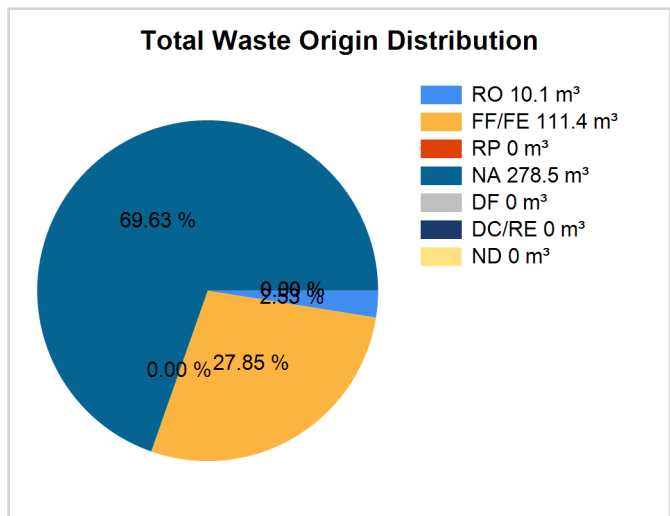
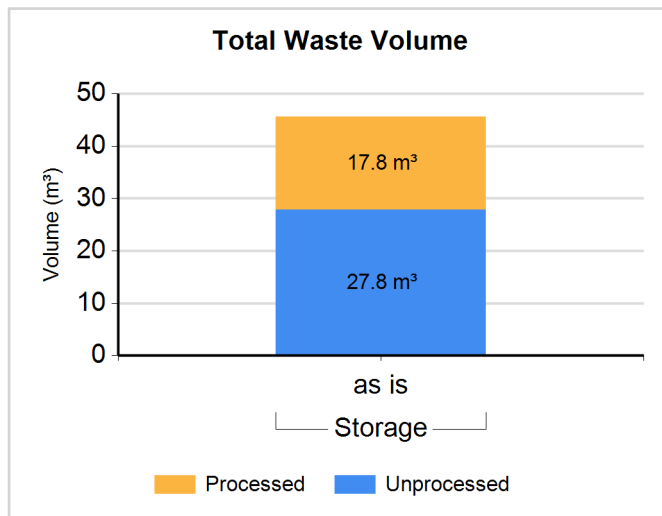
Full Name: Centro de Desenvolvimento da Tecnologia Nuclear

Inventory Reporting Date: December 2005

Waste Matrix Used: IAEA Def.

**Waste Inventory**

Est=distribution is an estimate, Proc.=Is the waste processed (Yes/No)? RO=Reactor Operations, FF/FE=Fuel Fabrication/Fuel Enrichment, RP=Reprocessing, NA=Nuclear Applications,DF=Defence, DC/RE=Decommissioning/Remediation, ND=Not Determined



Note: where volume "as dispo" is provided, volume "as is" is used in the graph instead.

**Waste Class: LLW**

| Waste Class Name | Location / Facility | Proc | Est. | Volume "as is" (m³) | Volume "as dispo" (m³) | RO % | FF/FE % | RP % | NA %   | DF % | DC/RE % | ND % |
|------------------|---------------------|------|------|---------------------|------------------------|------|---------|------|--------|------|---------|------|
| LLW              | Storage             | N    | Y    | 17.300              | 17.300                 | 0.00 | 0.00    | 0.00 | 100.00 | 0.00 | 0.00    | 0.00 |
| LLW              | Storage             | Y    | Y    | 2.000               | 2.000                  | 0.00 | 0.00    | 0.00 | 100.00 | 0.00 | 0.00    | 0.00 |

**Waste Class: ILW**

| Waste Class Name | Location / Facility | Proc | Est. | Volume "as is" (m³) | Volume "as dispo" (m³) | RO %  | FF/FE % | RP % | NA %  | DF % | DC/RE % | ND % |
|------------------|---------------------|------|------|---------------------|------------------------|-------|---------|------|-------|------|---------|------|
| ILW              | Storage             | N    | Y    | 10.500              | 10.500                 | 0.00  | 43.00   | 0.00 | 57.00 | 0.00 | 0.00    | 0.00 |
| ILW              | Storage             | Y    | Y    | 15.800              | 15.800                 | 10.10 | 68.40   | 0.00 | 21.50 | 0.00 | 0.00    | 0.00 |

## Site (Data) : CDTN

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Processing - Treatment method(s)**

| Method                 | Status  |             |   |               |
|------------------------|---------|-------------|---|---------------|
|                        | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Chemical Precipitation | N       | N           | Same  | N             |
| Compaction             | N       | N           | Same  | N             |
| Decontamination        | N       | N           | Same  | N             |
| Filtration             | N       | N           | Same  | N             |
| Segregation/Sorting    | N       | N           | Same  | N             |
| Shredding              | N       | N           | Same  | N             |
| Size Reduction         | N       | N           | Same  | N             |

**Processing - Conditioning method(s)**

| Method         | Status  |             |   |               |
|----------------|---------|-------------|---|---------------|
|                | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Bituminization | N       | N           | Same  | N             |
| Cementation    | N       | N           | Same  | N             |
| Encapsulation  | N       | N           | Increase  | N             |
| Solidification | N       | N           | Same  | N             |

## Site (Structure) : CRCN-CO

Country: BRAZIL

Reporting Year: 2005

Full Name: Centro Regional de Ciências Nucleares do Centro-Oeste

Description:

Official Website:

License Holder(s): certified facility (safety assessment required)  
Operating organization:  
Centro Regional de Ciências Nucleares do Centro-Oeste

Waste management facilities that are located at this site:

|              |                          |
|--------------|--------------------------|
| Facility:    | <b>GCC</b>               |
| Description: | Great Capacity Container |



## Site (Structure) : CRCN-CO

Country: BRAZIL

Reporting Year: 2005

**Disposal part of facility**                      **GCC**

The following shows disposal status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | No      |
| ILW         | No     | No      |
| HLW         | No     | No      |

|            |    |
|------------|----|
| List SRS?  | No |
| List UMMT? | No |

|                         |                         |                        |      |
|-------------------------|-------------------------|------------------------|------|
| Type:                   | engineered near surface |                        |      |
| Facility is modular?    | No                      |                        |      |
| Capacity existing (m3): | 1525                    | Capacity planned (m3): | 1525 |

|            |   |              |                     |
|------------|---|--------------|---------------------|
| Depth (m): | 4 | Host medium: | sedimentary (other) |
|------------|---|--------------|---------------------|

| Phase Name                         | Start Year | End Year | Estimate |
|------------------------------------|------------|----------|----------|
| planning and/or concept assessment | 1990       | 1993     | False    |
| site selection                     | 1991       | 1993     | False    |
| design                             | 1994       | 1995     | False    |
| construction                       | 1995       | 1995     | False    |
| commissioning                      | 1991       | 1997     | False    |
| operation                          | 1995       | 1997     | False    |
| closure                            | 1997       | 1997     | False    |
| institutional control              | 1997       | 2047     | False    |

## Site (Structure) : CRCN-CO

Country: BRAZIL

Reporting Year: 2005

|                     |                    |
|---------------------|--------------------|
| <b>Facility:</b>    | <b>GR</b>          |
| <b>Description:</b> | Goiânia Repository |

**Disposal part of facility GR**

The following shows disposal status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | No      |
| ILW         | No     | No      |
| HLW         | No     | No      |

|            |    |
|------------|----|
| List SRS?  | No |
| List UMMT? | No |

|                         |                         |                        |      |
|-------------------------|-------------------------|------------------------|------|
| Type:                   | engineered near surface |                        |      |
| Facility is modular?    | No                      |                        |      |
| Capacity existing (m3): | 1975                    | Capacity planned (m3): | 1975 |

|            |   |              |                     |
|------------|---|--------------|---------------------|
| Depth (m): | 4 | Host medium: | sedimentary (other) |
|------------|---|--------------|---------------------|

| Phase Name                         | Start Year | End Year | Estimate |
|------------------------------------|------------|----------|----------|
| planning and/or concept assessment | 1990       | 1993     | False    |
| site selection                     | 1991       | 1993     | False    |
| design                             | 1994       | 1996     | False    |
| construction                       | 1996       | 1997     | False    |
| commissioning                      | 1991       | 1997     | False    |
| operation                          | 1997       | 1997     | False    |
| closure                            | 1997       | 1997     | False    |
| institutional control              | 1997       | 2047     | False    |

## Site (Data) : CRCN-CO

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Site Name:** CRCN-CO

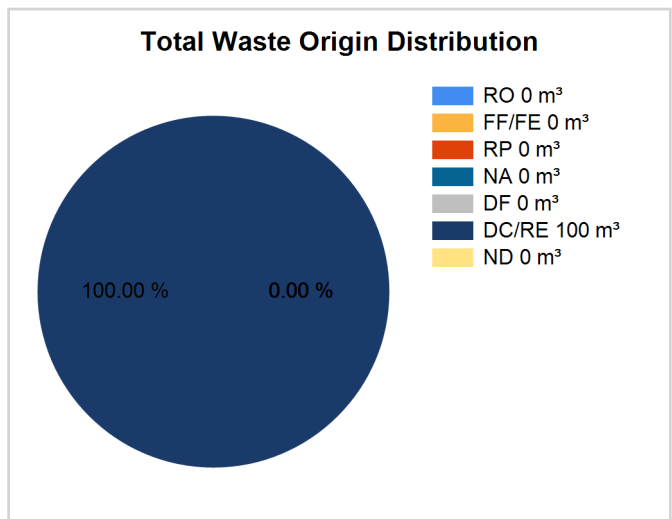
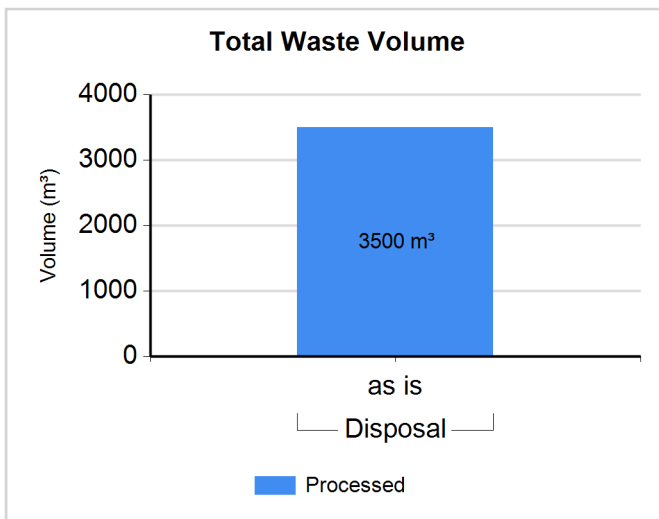
Full Name: Centro Regional de Ciências Nucleares do Centro-Oeste

Inventory Reporting Date: December 2005

Waste Matrix Used: IAEA Def.

**Waste Inventory**

Est=distribution is an estimate, Proc.=Is the waste processed (Yes/No)? RO=Reactor Operations, FF/FE=Fuel Fabrication/Fuel Enrichment, RP=Reprocessing, NA=Nuclear Applications,DF=Defence, DC/RE=Decommissioning/Remediation, ND=Not Determined



Note: where volume "as dispo" is provided, volume "as is" is used in the graph instead.

**Waste Class:** LLW

| Waste Class Name | Location / Facility | Proc | Est. | Volume "as is" (m³) | Volume "as dispo" (m³) | RO % | FF/FE % | RP % | NA % | DF % | DC/RE % | ND % |
|------------------|---------------------|------|------|---------------------|------------------------|------|---------|------|------|------|---------|------|
| LLW              | Disposal            | Y    | N    | 3500.000            | 3500.000               | 0.00 | 0.00    | 0.00 | 0.00 | 0.00 | 100.00  | 0.00 |

## Site (Structure) : IEN

Country: BRAZIL

Reporting Year: 2005

Full Name: Instituto de Engenharia Nuclear

Description:

Official Website:

License Holder(s): certified facility (safety assessment required)  
Operating organization:  
Instituto de Engenharia Nuclear  
Cidade Universitária - Ilha do Fundão  
Rio de Janeiro - RJ - Brasil  
CEP 21941-590

Waste management facilities that are located at this site:

## Site (Structure) : IEN

Country: BRAZIL

Reporting Year: 2005

|                     |   |
|---------------------|---|
| <b>Facility:</b>    | IEN_STR   |
| <b>Description:</b> | Concrete building with 7560 spent sources equivalent of 114.9 cubic meters and a total activity of 7.6 TBq. |

**Storage part of facility IEN\_STR**

The following shows storage status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | Yes     |
| ILW         | Yes    | Yes     |
| HLW         | No     | No      |

|                   |     |
|-------------------|-----|
| <b>List SRS?</b>  | Yes |
| <b>List UMMT?</b> | No  |

|                  |  |
|------------------|--|
| <b>Capacity:</b> |  |
|------------------|--|

## Types of Storage Units

| Storage Unit Name | Type Name | Year Opened | Closed? | Full? | Modular? | Contains SRS? |
|-------------------|-----------|-------------|---------|-------|----------|---------------|
| STR_1             | building  | 1970        | No      | No    | No       | Yes           |

**Processing part of facility IEN\_STR**

The following shows processing status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | Yes     |
| ILW         | Yes    | Yes     |
| HLW         | No     | No      |

|                     |                         |
|---------------------|-------------------------|
| <b>Type:</b>        | Treatment, Conditioning |
| <b>Year opened:</b> | 1970                    |

## Site (Data) : IEN

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Site Name:** IEN

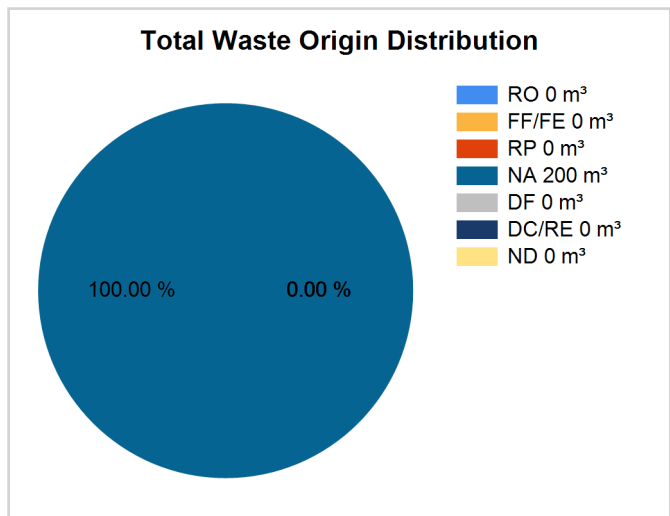
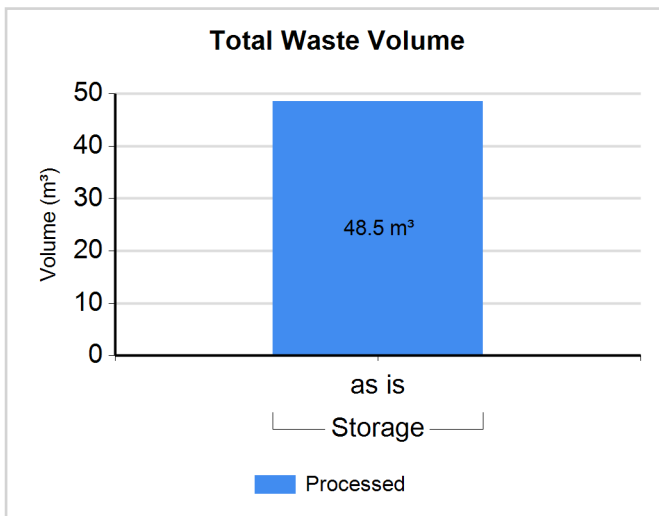
Full Name: Instituto de Engenharia Nuclear

Inventory Reporting Date: December 2005

Waste Matrix Used: IAEA Def.

**Waste Inventory**

Est=distribution is an estimate, Proc.=Is the waste processed (Yes/No)? RO=Reactor Operations, FF/FE=Fuel Fabrication/Fuel Enrichment, RP=Reprocessing, NA=Nuclear Applications,DF=Defence, DC/RE=Decommissioning/Remediation, ND=Not Determined



Note: where volume "as dispo" is provided, volume "as is" is used in the graph instead.

**Waste Class: LLW**

| Waste Class Name | Location / Facility | Proc | Est. | Volume "as is" (m³) | Volume "as dispo" (m³) | RO % | FF/FE % | RP % | NA %   | DF % | DC/RE % | ND % |
|------------------|---------------------|------|------|---------------------|------------------------|------|---------|------|--------|------|---------|------|
| LLW              | Storage             | Y    | Y    | 48.000              | 48.000                 | 0.00 | 0.00    | 0.00 | 100.00 | 0.00 | 0.00    | 0.00 |

**Waste Class: ILW**

| Waste Class Name | Location / Facility | Proc | Est. | Volume "as is" (m³) | Volume "as dispo" (m³) | RO % | FF/FE % | RP % | NA %   | DF % | DC/RE % | ND % |
|------------------|---------------------|------|------|---------------------|------------------------|------|---------|------|--------|------|---------|------|
| ILW              | Storage             | Y    | Y    | 0.500               | 0.500                  | 0.00 | 0.00    | 0.00 | 100.00 | 0.00 | 0.00    | 0.00 |

**Processing - Treatment method(s)**

| Method                 | Status  |             |   |               |
|------------------------|---------|-------------|---|---------------|
|                        | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Chemical Precipitation | N       | N           | Increase  | N             |
| Compaction             | N       | N           | Same  | N             |
| Decontamination        | N       | N           | Same  | N             |
| Filtration             | N       | N           | Increase  | N             |
| Ion Exchange           | N       | N           | Increase  | N             |
| Wastewater Treatment   | N       | N           | Increase  | N             |

**Site (Data) : IEN**

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Processing - Conditioning method(s)**

| Method      | Status  |             |   |               |
|-------------|---------|-------------|---|---------------|
|             | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Cementation | N       | N           | Increase  | N             |

## Site (Structure) : IPEN

Country: BRAZIL

Reporting Year: 2005

Full Name: Instituto de Pesquisas Energéticas e Nucleares

Description:

Official Website:

License Holder(s): certified facility (safety assessment required)  
Operating organization:  
Instituto de Pesquisas Energéticas e Nucleares  
Travessa R, 400 - Cidade Universitária  
São Paulo - SP - Brasil  
CEP 05508-900

Waste management facilities that are located at this site:



## Site (Structure) : IPEN

Country: BRAZIL

Reporting Year: 2005

|                     |   |
|---------------------|---|
| <b>Facility:</b>    | IPEN_STR  |
| <b>Description:</b> | "Unidade Integrada de Tratamento e Armazenamento de Rejeitos" (UITAR). 5.450 spent sources storage equivalent of 350 cubic meters and a total activity of 543 TBq. Includes a hot cell for the dismantling of Am-241 lightning rods and a cementation system. |

**Storage part of facility** IPEN\_STR

The following shows storage status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | Yes     |
| ILW         | Yes    | Yes     |
| HLW         | No     | No      |

|                   |     |
|-------------------|-----|
| <b>List SRS?</b>  | Yes |
| <b>List UMMT?</b> | No  |

|                  |  |
|------------------|--|
| <b>Capacity:</b> |  |
|------------------|--|

## Types of Storage Units

| Storage Unit Name | Type Name | Year Opened | Closed? | Full? | Modular? | Contains SRS? |
|-------------------|-----------|-------------|---------|-------|----------|---------------|
| STR_01            | building  | 1970        | No      | No    | No       | Yes           |

**Processing part of facility** IPEN\_STR

The following shows processing status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | Yes     |
| ILW         | Yes    | Yes     |
| HLW         | No     | No      |

|                     |                         |
|---------------------|-------------------------|
| <b>Type:</b>        | Treatment, Conditioning |
| <b>Year opened:</b> | 1970                    |

## Site (Data) : IPEN

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Site Name:** IPEN

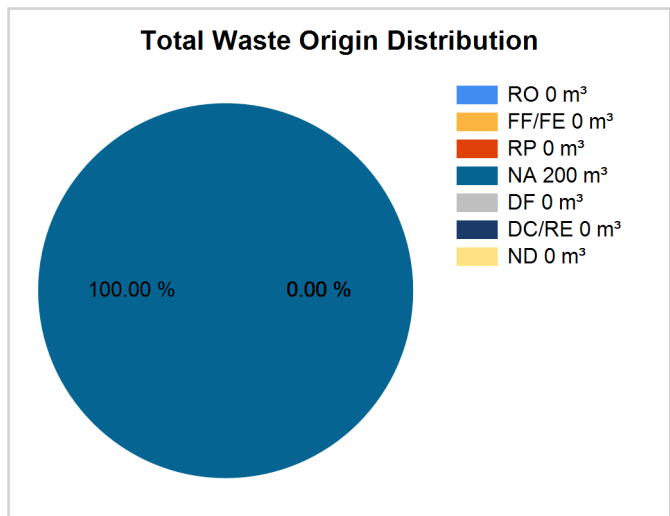
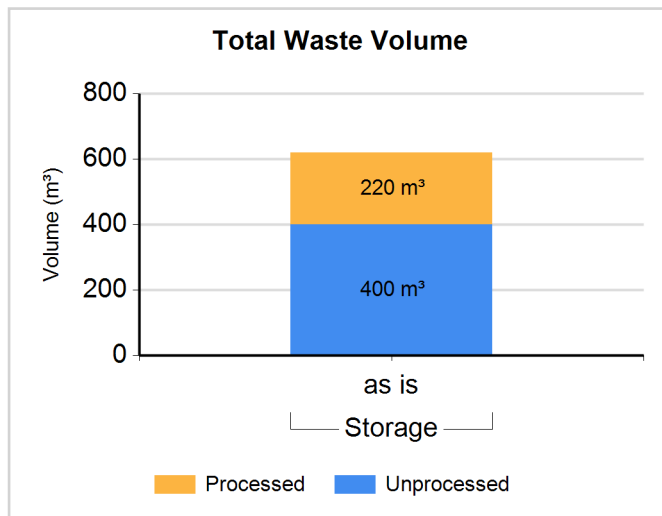
Full Name: Instituto de Pesquisas Energéticas e Nucleares

Inventory Reporting Date: December 2005

Waste Matrix Used: IAEA Def.

**Waste Inventory**

Est=distribution is an estimate, Proc.=Is the waste processed (Yes/No)? RO=Reactor Operations, FF/FE=Fuel Fabrication/Fuel Enrichment, RP=Reprocessing, NA=Nuclear Applications,DF=Defence, DC/RE=Decommissioning/Remediation, ND=Not Determined



Note: where volume "as dispo" is provided, volume "as is" is used in the graph instead.

**Waste Class:** LLW

| Waste Class Name | Location / Facility | Proc | Est. | Volume "as is" (m³) | Volume "as dispo" (m³) | RO % | FF/FE % | RP % | NA %   | DF % | DC/RE % | ND % |
|------------------|---------------------|------|------|---------------------|------------------------|------|---------|------|--------|------|---------|------|
| LLW              | Storage             | N    | Y    | 400.000             | 400.000                | 0.00 | 0.00    | 0.00 | 100.00 | 0.00 | 0.00    | 0.00 |
| LLW              | Storage             | Y    | Y    | 220.000             | 220.000                | 0.00 | 0.00    | 0.00 | 100.00 | 0.00 | 0.00    | 0.00 |

## Site (Data) : IPEN

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Processing - Treatment method(s)**

| Method                   | Status  |             |   |               |
|--------------------------|---------|-------------|---|---------------|
|                          | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Chemical Precipitation   | N       | N           | Intermittent                                      | N             |
| Compaction               | N       | N           | Same  | N             |
| Decontamination          | N       | N           | Intermittent                                      | N             |
| Evaporation              | N       | N           | Suspended   | N             |
| Filtration               | N       | N           | Same  | N             |
| Ion Exchange             | N       | N           | Intermittent                                      | N             |
| Segregation/Sorting      | N       | N           | Same  | N             |
| Shredding and Compaction | N       | N           | Intermittent                                      | N             |
| Size Reduction           | N       | N           | Same  | N             |
| Wastewater Treatment     | N       | N           | Intermittent                                      | N             |
| Water/Acid Washing       | N       | N           | Intermittent                                      | N             |

**Processing - Conditioning method(s)**

| Method             | Status  |             |   |               |
|--------------------|---------|-------------|---|---------------|
|                    | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Cementation        | N       | N           | Intermittent                                      | N             |
| Containerization   | N       | N           | Same  | N             |
| Encapsulation      | N       | N           | Suspended   | N             |
| Macroencapsulation | N       | N           | Intermittent                                      | N             |
| Solidification     | N       | N           | Intermittent                                      | N             |

## Site (Structure) : Angra I

Country: BRAZIL

Reporting Year: 2005

Full Name: Central Nuclear Almirante Álvaro Alberto-CNAAA

Description:

Official Website:

License Holder(s): Eletronuclear - Eletrobrás Termonuclear S.A  
 Rua da Candelária, 65, Centro, RJ  
 CEP: 20091-020  
 Rio de Janeiro - RJ

Waste management facilities that are located at this site:

| <b>Facility:</b>  | <b>Facility 1</b>   |         |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |
|---|---|---------|--|-------------|--------|---------|------|----|----|-----|----|----|-----|----|----|-----|----|----|
| Description:  | Angra I is a 650 MW PWR and initiated its operation in 1981 |         |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |
| <p><b>Processing part of facility                      Facility 1</b></p> <p>The following shows processing status for waste classes and SRS.</p> <table border="1"> <thead> <tr> <th>Waste Class</th> <th>Actual</th> <th>Planned</th> </tr> </thead> <tbody> <tr> <td>VLLW</td> <td>No</td> <td>No</td> </tr> <tr> <td>LLW</td> <td>No</td> <td>No</td> </tr> <tr> <td>ILW</td> <td>No</td> <td>No</td> </tr> <tr> <td>HLW</td> <td>No</td> <td>No</td> </tr> </tbody> </table> |   |         |  | Waste Class | Actual | Planned | VLLW | No | No | LLW | No | No | ILW | No | No | HLW | No | No |
| Waste Class   | Actual  | Planned |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |
| VLLW  | No  | No      |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |
| LLW   | No  | No      |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |
| ILW   | No  | No      |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |
| HLW   | No  | No      |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |
| Type:   | Treatment, Conditioning                                     |         |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |
| Year opened:  | 1981  |         |  |             |        |         |      |    |    |     |    |    |     |    |    |     |    |    |

**Site (Data) : Angra I**

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Site Name:** Angra I

Full Name: Central Nuclear Almirante Álvaro Alberto-CNAAA

Inventory Reporting Date: December 2005 Waste Matrix Used: IAEA Def.

**Processing - Treatment method(s)**

| Method                   | Status  |             |   |               |
|--------------------------|---------|-------------|---|---------------|
|                          | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Compaction               | N       | N           | Same  | N             |
| Decontamination          | N       | N           | Same  | N             |
| Evaporation              | N       | N           | Same  | N             |
| Filtration               | N       | N           | Same  | N             |
| Ion Exchange             | N       | N           | Same  | N             |
| Rinsing                  | N       | N           | Same  | N             |
| Segregation/Sorting      | N       | N           | Same  | N             |
| Shredding and Compaction | N       | N           | Same  | N             |
| Wastewater Treatment     | N       | N           | Same  | N             |

**Processing - Conditioning method(s)**

| Method        | Status  |             |   |               |
|---------------|---------|-------------|---|---------------|
|               | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Cementation   | N       | N           | Same  | N             |
| Encapsulation | N       | N           | Same  | N             |

## Site (Structure) : Angra II

Country: BRAZIL

Reporting Year: 2005

Full Name: Central Nuclear Almirante Álvaro Alberto-CNAAA

Description:

Official Website:

License Holder(s): Eletronuclear - Eletrobrás Termonuclear S.A  
Rua da Candelária, 65, Centro, RJ  
CEP: 20091-020  
Rio de Janeiro - RJ

Waste management facilities that are located at this site:

## Site (Structure) : Angra II

Country: BRAZIL

Reporting Year: 2005

|                     |  |
|---------------------|--|
| <b>Facility:</b>    | <b>Facility 2</b>  |
| <b>Description:</b> | Angra II is a 1.300 MW PWR and initiated its operation on January 2000 |

**Storage part of facility Facility 2**

The following shows storage status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | Yes     |
| ILW         | No     | No      |
| HLW         | No     | No      |

|            |    |
|------------|----|
| List SRS?  | No |
| List UMMT? | No |

|                  |  |
|------------------|--|
| <b>Capacity:</b> | Storage divided into two rooms. The first one is the low level waste room whose capacity is 276 cubic meters and the other one is the medium level waste room with capacity to 52.8 cubic meters . |
|------------------|--|

## Types of Storage Units

| Storage Unit Name | Type Name | Year Opened | Closed? | Full? | Modular? | Contains SRS? |
|-------------------|-----------|-------------|---------|-------|----------|---------------|
| KPE               | building  | 2000        | No      | No    | No       | No            |

**Processing part of facility Facility 2**

The following shows processing status for waste classes and SRS.

| Waste Class | Actual | Planned |
|-------------|--------|---------|
| VLLW        | No     | No      |
| LLW         | Yes    | Yes     |
| ILW         | No     | No      |
| HLW         | No     | No      |

|                     |                         |
|---------------------|-------------------------|
| <b>Type:</b>        | Treatment, Conditioning |
| <b>Year opened:</b> | 2000                    |

## Site (Data) : Angra II

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Site Name:** Angra II

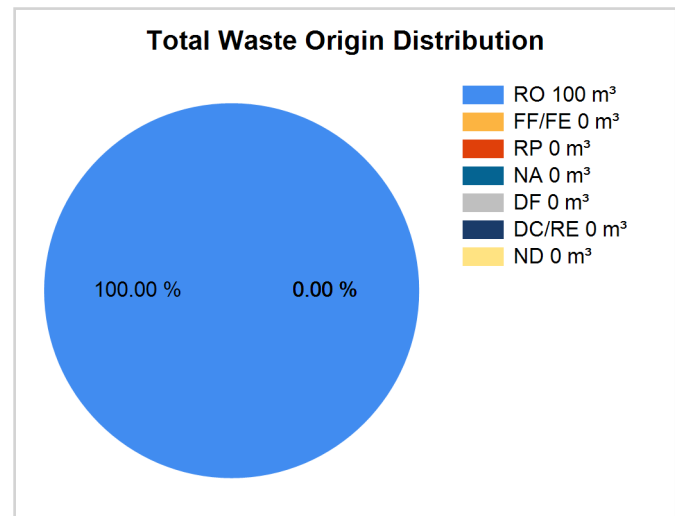
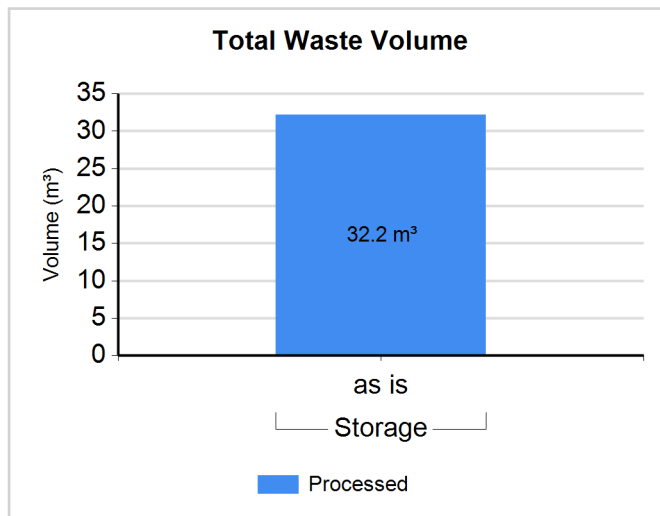
Full Name: Central Nuclear Almirante Álvaro Alberto-CNAAA

Inventory Reporting Date: December 2005

Waste Matrix Used: IAEA Def.

**Waste Inventory**

Est=distribution is an estimate, Proc.=Is the waste processed (Yes/No)? RO=Reactor Operations, FF/FE=Fuel Fabrication/Fuel Enrichment, RP=Reprocessing, NA=Nuclear Applications,DF=Defence, DC/RE=Decommissioning/Remediation, ND=Not Determined



Note: where volume "as dispo" is provided, volume "as is" is used in the graph instead.

**Waste Class:** LLW

| Waste Class Name | Location / Facility | Proc | Est. | Volume "as is" (m³) | Volume "as dispo" (m³) | RO %   | FF/FE % | RP % | NA % | DF % | DC/RE % | ND % |
|------------------|---------------------|------|------|---------------------|------------------------|--------|---------|------|------|------|---------|------|
| LLW              | Storage             | Y    | N    | 32.200              | 32.200                 | 100.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 |

**Processing - Treatment method(s)**

| Method                   | Status  |             |   |               |
|--------------------------|---------|-------------|---|---------------|
|                          | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Compaction               | N       | N           | Same  | N             |
| Decontamination          | N       | N           | Same  | N             |
| Evaporation              | N       | N           | Same  | N             |
| Filtration               | N       | N           | Same  | N             |
| Ion Exchange             | N       | N           | Same  | N             |
| Rinsing                  | N       | N           | Same  | N             |
| Segregation/Sorting      | N       | N           | Same  | N             |
| Shredding and Compaction | N       | N           | Same  | N             |
| Wastewater Treatment     | N       | N           | Same  | N             |



## Site (Data) : Angra II

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

**Processing - Conditioning method(s)**

| Method         | Status  |             |   |               |
|----------------|---------|-------------|---|---------------|
|                | Planned | R&D program | Current practice method use over the last 5 years | Past Practice |
| Bituminization | N       | N           | Same  | N             |
| Encapsulation  | N       | N           | Same  | N             |

## Site (Structure) : DIRR

Country: BRAZIL

Reporting Year: 2005

Full Name: Central Nuclear Almirante Álvaro Alberto-CNAAA

Description:

Official Website:

License Holder(s): ETN

Waste management facilities that are located at this site:

|   |   |                    |                |              |                 |                      |
|---|---|--------------------|----------------|--------------|-----------------|----------------------|
| <b>Facility:</b>  | <b>Facility 3</b>   |                    |                |              |                 |                      |
| <b>Description:</b>   | Storage of low and intermediate level waste (spent resins, compressible waste, evaporator concentrate, etc) |                    |                |              |                 |                      |
| <b>Storage part of facility Facility 3</b>                    |   |                    |                |              |                 |                      |
| The following shows storage status for waste classes and SRS. |   |                    |                |              |                 |                      |
| <b>Waste Class</b>  | <b>Actual</b>   | <b>Planned</b>     |                |              |                 |                      |
| VLLW  | No  | No                 |                |              |                 |                      |
| LLW   | Yes   | Yes                |                |              |                 |                      |
| ILW   | No  | No                 |                |              |                 |                      |
| HLW   | No  | No                 |                |              |                 |                      |
| <b>List SRS?</b>  | No  |                    |                |              |                 |                      |
| <b>List UMMT?</b>   | No  |                    |                |              |                 |                      |
| <b>Capacity:</b>  | 2375 cubic meters   |                    |                |              |                 |                      |
| <b>Types of Storage Units</b>                                 |   |                    |                |              |                 |                      |
| <b>Storage Unit Name</b>                                      | <b>Type Name</b>  | <b>Year Opened</b> | <b>Closed?</b> | <b>Full?</b> | <b>Modular?</b> | <b>Contains SRS?</b> |
| DIRR  | building  | 1981               | No             | No           | Yes             | No                   |

## Site (Data) : DIRR

Stock of waste as at December 2005

Country: BRAZIL

Reporting Year: 2005

Site Name: DIRR

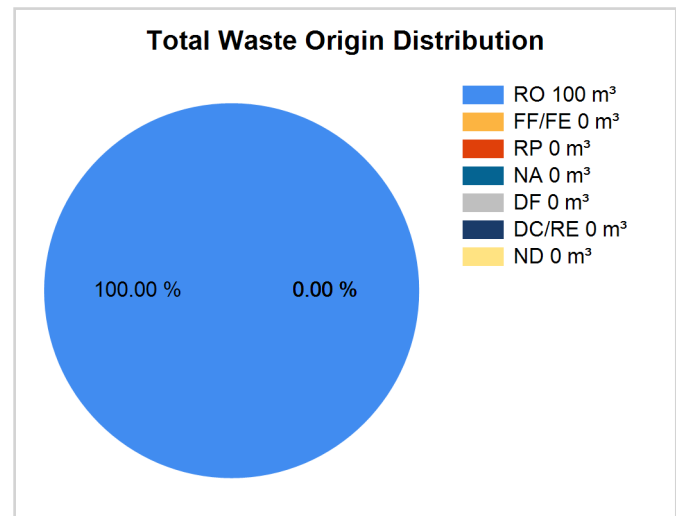
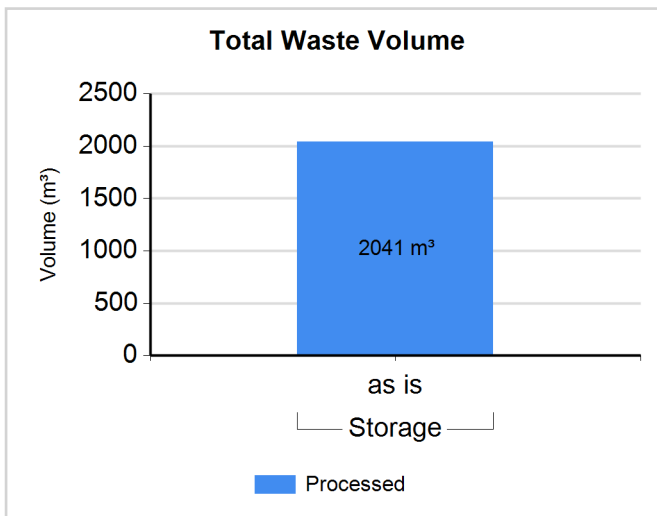
Full Name: Central Nuclear Almirante Álvaro Alberto-CNAAA

Inventory Reporting Date: December 2005

Waste Matrix Used: IAEA Def.

## Waste Inventory

Est=distribution is an estimate, Proc.=Is the waste processed (Yes/No)? RO=Reactor Operations, FF/FE=Fuel Fabrication/Fuel Enrichment, RP=Reprocessing, NA=Nuclear Applications,DF=Defence, DC/RE=Decommissioning/Remediation, ND=Not Determined



Note: where volume "as dispo" is provided, volume "as is" is used in the graph instead.

Waste Class: LLW

| Waste Class Name | Location / Facility | Proc | Est. | Volume "as is" (m³) | Volume "as dispo" (m³) | RO %   | FF/FE % | RP % | NA % | DF % | DC/RE % | ND % |
|------------------|---------------------|------|------|---------------------|------------------------|--------|---------|------|------|------|---------|------|
| LLW              | Storage             | Y    | N    | 2041.000            | 2041.000               | 100.00 | 0.00    | 0.00 | 0.00 | 0.00 | 0.00    | 0.00 |

## Regulators

Country: BRAZIL

Reporting Year: 2005

|               |  |
|---------------|--|
| <b>Name:</b>  | <b>CNEN</b>                            |
| Full Name:    | Comissão Nacional de Energia Nuclear   |
| Divison:      | Diretoria de Radioproteção e Segurança |
| City or Town: | Rio de Janeiro                         |
| Main Website: |  |

|               |  |
|---------------|--|
| <b>Name:</b>  | <b>IBAMA</b>   |
| Full Name:    | Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis |
| Divison:      |  |
| City or Town: | Brasília - DF  |
| Main Website: |  |

## Regulations / Laws

Country: BRAZIL

Reporting Year: 2005

|                                 |   |            |
|---------------------------------|---|------------|
| <b>Name:</b>                    | <b>REG_01</b>   |            |
| Title or Name:                  | CRITÉRIOS DE ACEITAÇÃO PARA DEPOSIÇÃO DE REJEITOS RADIOATIVOS DE BAIXO E MÉDIO NÍVEIS DE RADIAÇÃO |            |
| Reference Number:               | Norma CNEN-NN-6.09  |            |
| Date Promulgated or Proclaimed: | 9/23/2002   | Regulation |

Comment **# 6856: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - LILW-SL

|                                 |                              |     |
|---------------------------------|------------------------------|-----|
| <b>Name:</b>                    | <b>LAW_01</b>                |     |
| Title or Name:                  | Lei nº 10.308, de 20.11.2001 |     |
| Reference Number:               | Lei 10.308                   |     |
| Date Promulgated or Proclaimed: | 11/20/2001                   | Law |

Comment **# 6857: Wastes that are regulated by the Law**

Matrix IAEA Def. - HLW, LILW-LL, LILW-SL

Comment **# 7514: Lei no. 10.308**

Dispõe sobre a seleção de locais, a construção, o licenciamento, a operação, a fiscalização, os custos, a indenização, a responsabilidade civil e as garantias referentes aos depósitos de rejeitos radioativos, e dá outras providências.

|                                 |  |            |
|---------------------------------|--|------------|
| <b>Name:</b>                    | <b>REG_02</b>  |            |
| Title or Name:                  | Gerência de Rejeitos Radioativos em Instalações Radiativas |            |
| Reference Number:               | Norma CNEN-NE-6.05   |            |
| Date Promulgated or Proclaimed: | 12/17/1985   | Regulation |

Comment **# 6858: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - LILW-SL

|                                 |  |            |
|---------------------------------|--|------------|
| <b>Name:</b>                    | <b>REG_03</b>  |            |
| Title or Name:                  | Seleção e Escolha de Locais para Depósitos de Rejeitos Radioativos |            |
| Reference Number:               | Norma CNEN-NE-6.06   |            |
| Date Promulgated or Proclaimed: | 1/24/1990  | Regulation |

Comment **# 6859: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - LILW-LL, LILW-SL

## Regulations / Laws

Country: BRAZIL

Reporting Year: 2005

|                                 |                                     |            |
|---------------------------------|-------------------------------------|------------|
| <b>Name:</b>                    | <b>REG_04</b>                       |            |
| Title or Name:                  | Diretrizes Básicas de Radioproteção |            |
| Reference Number:               | Norma CNEN-NE-3.01                  |            |
| Date Promulgated or Proclaimed: | 8/1/1988                            | Regulation |

Comment **# 6860: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - HLW, LILW-LL, LILW-SL

|                                 |                                     |            |
|---------------------------------|-------------------------------------|------------|
| <b>Name:</b>                    | <b>REG_05</b>                       |            |
| Title or Name:                  | Transporte de Materiais Radioativos |            |
| Reference Number:               | Norma CNEN-NE-5.01                  |            |
| Date Promulgated or Proclaimed: | 8/1/1988                            | Regulation |

Comment **# 6861: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - HLW, LILW-LL, LILW-SL

|                                 |  |            |
|---------------------------------|--|------------|
| <b>Name:</b>                    | <b>REG_06</b>  |            |
| Title or Name:                  | Radioproteção e Segurança para Deposição Final dos Rejeitos Radioativos Armazenados em Abadia de Goiás |            |
| Reference Number:               | Instrução Técnica CNEN-IT-01   |            |
| Date Promulgated or Proclaimed: | 12/1/1990  | Regulation |

Comment **# 6862: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - LILW-SL

|                                 |  |            |
|---------------------------------|--|------------|
| <b>Name:</b>                    | <b>REG_07</b>  |            |
| Title or Name:                  | Certificação do Atendimento aos Requisitos de Segurança e Radioproteção pelas Instalações Nucleares e pelas Instalações Radiativas da CNEN |            |
| Reference Number:               | Instrução Normativa IN-CNEN-0001/94  |            |
| Date Promulgated or Proclaimed: | 12/1/1994  | Regulation |

Comment **# 6863: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - HLW, LILW-LL, LILW-SL

## Regulations / Laws

Country: BRAZIL

Reporting Year: 2005

|                                 |   |            |
|---------------------------------|---|------------|
| <b>Name:</b>                    | <b>REG_08</b>                           |            |
| Title or Name:                  | Licenciamento de Instalações Radiativas |            |
| Reference Number:               | Norma CNEN-NE-6.02                      |            |
| Date Promulgated or Proclaimed: | 6/2/1998                                | Regulation |

Comment **# 6864: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - HLW, LILW-LL, LILW-SL

|                                 |  |            |
|---------------------------------|--|------------|
| <b>Name:</b>                    | <b>REG_09</b>                          |            |
| Title or Name:                  | Licenciamento de Instalações Nucleares |            |
| Reference Number:               | Norma CNEN-NE-1.04                     |            |
| Date Promulgated or Proclaimed: | 12/14/1984                             | Regulation |

Comment **# 6865: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - HLW, LILW-LL, LILW-SL

|                                 |   |            |
|---------------------------------|---|------------|
| <b>Name:</b>                    | <b>REG_10</b>   |            |
| Title or Name:                  | Sistema de Barragem de Rejeitos Contendo Radionuclídeos |            |
| Reference Number:               | Norma CNEN-NE-1.10                                      |            |
| Date Promulgated or Proclaimed: | 11/27/1980  | Regulation |

Comment **# 6866: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - LILW-LL, LILW-SL

|                                 |  |            |
|---------------------------------|--|------------|
| <b>Name:</b>                    | <b>REG_11</b>  |            |
| Title or Name:                  | Licenciamento de Minas e Usinas de Beneficiamento de Minérios de Urânio e/ou Tório |            |
| Reference Number:               | Norma CNEN-NE-1.13   |            |
| Date Promulgated or Proclaimed: | 8/8/1989   | Regulation |

Comment **# 6867: Wastes that are regulated by the Regulation**

Matrix IAEA Def. - LILW-LL, LILW-SL

## Regulations / Laws

Country: BRAZIL

Reporting Year: 2005

|                                 |                              |     |  |
|---------------------------------|------------------------------|-----|--|
| <b>Name:</b>                    | <b>LAW_02</b>                |     |  |
| Title or Name:                  | Lei no. 4.118, de 27.08.1962 |     |  |
| Reference Number:               | Lei 4.118                    |     |  |
| Date Promulgated or Proclaimed: | 8/27/1962                    | Law |  |

Comment **# 7515: Lei 4.118**

Dispõe sobre a política nacional de energia nuclear, cria a Comissão Nacional de Energia Nuclear, e dá outras providências.

|                                 |                               |     |  |
|---------------------------------|-------------------------------|-----|--|
| <b>Name:</b>                    | <b>LAW_03</b>                 |     |  |
| Title or Name:                  | Lei no. 6.189, de 16.12.1974. |     |  |
| Reference Number:               | Lei 6.189                     |     |  |
| Date Promulgated or Proclaimed: | 12/16/1974                    | Law |  |

Comment **# 7516: Lei 6.189**

Nuclear law that establishes rules in this area.

Altera a Lei no. 4.118, de 27 de agosto de 1962, e a Lei no. 5.740, de 1 de dezembro de 1971, que criaram, respectivamente, a Comissão Nacional de Energia Nuclear - CNEN e a Companhia Brasileira de Tecnologia Nuclear - CBTN, que passa a denominar-se Empresas Nucleares Brasileiras Sociedade Anônima - NUCLEBRÁS, e dá outras providências.

|                                 |                              |     |  |
|---------------------------------|------------------------------|-----|--|
| <b>Name:</b>                    | <b>LAW_04</b>                |     |  |
| Title or Name:                  | Lei no. 6.938, de 31.08.1981 |     |  |
| Reference Number:               | Lei 6.938                    |     |  |
| Date Promulgated or Proclaimed: | 8/31/1981                    | Law |  |

Comment **# 7517: Lei 6.938**

Dispõe sobre a Política Nacional do Meio Ambiente, seus fins e mecanismo de formulação e aplicação, e dá outras providências.

|                                 |   |            |  |
|---------------------------------|---|------------|--|
| <b>Name:</b>                    | <b>REG_12</b>                                     |            |  |
| Title or Name:                  | Garantia da Qualidade para Usinas Nucleoelétricas |            |  |
| Reference Number:               | Norma CNEN-NN-1.16                                |            |  |
| Date Promulgated or Proclaimed: | 9/21/1999   | Regulation |  |

|                                 |  |            |  |
|---------------------------------|--|------------|--|
| <b>Name:</b>                    | <b>REG_13</b>  |            |  |
| Title or Name:                  | Proteção Física de Unidades Operacionais da Área Nuclear |            |  |
| Reference Number:               | Norma CNEN-NE-2.01                                       |            |  |
| Date Promulgated or Proclaimed: | 4/19/1996  | Regulation |  |



## Regulations / Laws

Country: BRAZIL

Reporting Year: 2005

|                                 |                                 |            |  |
|---------------------------------|---------------------------------|------------|--|
| <b>Name:</b>                    | <b>REG_14</b>                   |            |  |
| Title or Name:                  | Controle de Materiais Nucleares |            |  |
| Reference Number:               | Norma CNEN-NN-2.02              |            |  |
| Date Promulgated or Proclaimed: | 9/21/1999                       | Regulation |  |

|                                 |                     |     |  |
|---------------------------------|---------------------|-----|--|
| <b>Name:</b>                    | <b>LAW_05</b>       |     |  |
| Title or Name:                  | Civil Liability Law |     |  |
| Reference Number:               | Lei 6.453           |     |  |
| Date Promulgated or Proclaimed: | 12/17/1977          | Law |  |

# Waste Management Infrastructure and Financing

Country: BRAZIL

Reporting Year: 2007

## National Infrastructure

|                                  |  |
|----------------------------------|--|
| Nuclear Energy Context:          |  |
| Research & Development:          |  |
| Policies and Programs:           |  |
| Decommissioning and Dismantling: |  |
| Legal Framework:                 |  |
| Planned Improvements:            |  |

## National Financing

|                        |  |
|------------------------|--|
| Nuclear installations: |  |
| Legacy Wastes:         |  |
| Medical installations: |  |
| Extractive Industries: |  |
| Additional Comments:   |  |

## Policies

Country: BRAZIL

Reporting Year: 2005

## National Systems

| Policy           |   | (Yes;Partially;No)    |
|------------------|---|-----------------------|
| Q14              | Has your Country implemented a national policy for radioactive waste management?  | Partially             |
| Strategies       |   | (Yes;Partially;No)    |
| Q15              | Has your country developed strategies to implement a national policy?   | Partially             |
| Requirements     |   | (Yes;Partially;No)    |
| Q17              | identified the parties involved in the different steps of radioactive waste management  | Yes                   |
| Q18              | specified a rational set of safety, radiological and environmental protection objectives  | Yes                   |
| Q19              | implemented a mechanism to identify existing and anticipated radioactive wastes   | Yes                   |
| Q20              | implemented controls over radioactive waste generation  | Yes                   |
| Q21              | identified available methods and facilities to process, store and dispose of radioactive waste on an appropriate time-scale   | Yes                   |
| Q22              | taken into account interdependencies among all steps in radioactive waste generation and management   | Yes                   |
| Q23              | implemented appropriate research and development to support the operational and regulatory needs  | Partially             |
| Q24              | implemented a funding structure and the allocation of resources that are essential for radioactive waste management   | Partially             |
| Q25              | implemented formal mechanisms for disseminating information to the public and for public consultation   | Partially             |
| Responsibilities |   | (Complete;Incomplete) |
| Q28              | establish and implement a legal framework for the management of radioactive waste   | Complete              |
| Q29              | establish or designate a regulatory body that has the responsibility for carrying out the regulatory function with regard to safety and the protection of human health and the environment. | Complete              |
| Q30              | define the responsibilities of waste generators and operators of waste management facilities  | Complete              |
| Q31              | provide for adequate resources  | Incomplete            |
| Q33              | enforce compliance with regulatory requirements   | Complete              |
| Q34              | implement the licensing process   | Complete              |
| Q35              | advise the government   | Complete              |
| Q37              | identify an acceptable destination for the radioactive waste  | Complete              |
| Q114             | comply with legal requirements  | Complete              |

## Policies

Country: BRAZIL

Reporting Year: 2005

| <b>Activities</b> |   | <b>(Yes;Partially;No)</b> |
|-------------------|---|---------------------------|
| Q43               | perform safety and environmental impact assessments for radioactive waste management facilities   | Yes                       |
| Q44               | ensure adequate radiation protection for workers, the general public and the environment  | Yes                       |
| Q45               | ensure suitable staff, equipment, facilities, training and operating procedures are available to perform the safe radioactive waste management steps  | Partially                 |
| Q46               | establish and implement a quality assurance programme for the radioactive waste generated or its processing, storage and disposal   | Partially                 |
| Q47               | establish and keep records of appropriate information regarding the generation, processing, storage and disposal of radioactive waste, including an inventory of radioactive waste                            | Yes                       |
| Q48               | provide surveillance and control of activities involving radioactive waste as required by the regulatory body   | Yes                       |
| Q49               | collect, analyze and, as appropriate, share operational experience to ensure continued safety improvements in radioactive waste management  | Yes                       |
| Q50               | conduct or otherwise ensure appropriate research and development to support operational needs in radioactive waste management   | Yes                       |
| <b>Clearance</b>  |   | <b>(Yes;No)</b>           |
| Q128              | Does your country have "clearly defined clearance levels based on radiological criteria, with policy statements that material below those levels can be recycled or disposed of with non-radioactive wastes"? | Yes                       |
| Q129              | Has your country ever used a "case-by-case" approach to clearing radioactive wastes (excluding spent/disused sealed radioactive sources)?   | Yes                       |
| Q130              | Has your country ever used clearance levels to dispose of, reuse or recycle radioactive waste as non-radioactive waste or as a non-radioactive resource (excluding spent/disused sealed radioactive sources)? | Yes                       |

## Policies

Country: BRAZIL

Reporting Year: 2005

## Disposal Facilities

| Licensing    |  | (Yes - All;Yes - Some;No) |
|--------------|--|---------------------------|
| Q53          | Environmental Assessment (EA)  | Yes - All                 |
| Q54          | Environmental Impact Statement (EIS)   | Yes - All                 |
| Q55          | Performance Assessment (PA)  | Yes - All                 |
| Q56          | Quality Assurance (QA)   | Yes - Some                |
| Q57          | Safety Assessment (SA)   | Yes - All                 |
| Q59          | If Quality Assurance is part of your Country's current, waste disposal facility licensing policy, does the QA Program conform to international standards (such as the ISO9000 series)? | Yes - All                 |
| Operation    |  | (Yes - All;Yes - Some;No) |
| Q60          | Does your Country have formal, documented waste acceptance criteria for its operating or proposed disposal facilities?   | Yes - All                 |
| Post-Closure |  | (Yes;No)                  |
| Q61          | Does your Country have any written policies to address the maintenance of records that describe the design, location and inventory of waste disposal facilities?                       | Yes                       |
| Q62          | If the answer to the previous question was YES, does your Country have any policies, laws or regulations that prescribe what records are to be maintained?                             | Yes                       |
| Q63          | Does your Country have any written policies to address active institutional controls or passive institutional controls, such as monitoring or access restrictions?                     | Yes                       |
| Q65          | access restrictions  | Yes                       |
| Q66          | drainage and/or leachate collection system(s)  | Yes                       |
| Q67          | leachate treatment systems   | Yes                       |
| Q68          | environmental monitoring   | Yes                       |
| Q69          | facility monitoring  | Yes                       |
| Q70          | surveillance   | Yes                       |
| Q71          | plans for intervention measures during active institutional control if there is an unplanned release of radioactive materials from the disposal facility                               | Yes                       |

## Policies

Country: BRAZIL

Reporting Year: 2005

**Processing/Storage**

| <b>Policies/Procedures</b> |  | <b>(Yes;No)</b> |
|----------------------------|--|-----------------|
| Q73                        | waste sorting/segregation  | Yes             |
| Q74                        | waste minimization   | Yes             |
| Q75                        | waste storage  | Yes             |
| Q76                        | processing and/or storing and/or disposing of nuclear fuel cycle waste separately from non-nuclear fuel cycle waste (also known as nuclear applications waste) | Yes             |
| Q78                        | Does your country have any legislation, regulation, or policy that waste processing must take place prior to storage (see following note)                      | Yes             |
| <b>Implementation</b>      |  | <b>(Yes;No)</b> |
| Q80                        | In your Country are there any waste processing facilities at the same location where the waste is generated?   | Yes             |
| Q81                        | In your Country are there any centralized waste processing facilities?   | No              |
| Q82                        | In your Country are there any mobile waste processing facilities?  | No              |
| <b>Foreign</b>             |  | <b>(Yes;No)</b> |
| Q121                       | Has your country sent any wastes or spent fuel to another country for processing (reprocessing for fuel)?  | No              |
| Q124                       | Has your country accepted any wastes or spent fuel from another country for processing (reprocessing for fuel)?  | No              |

## Policies

Country: BRAZIL

Reporting Year: 2005

## Spent/Disused SRS

| Registration       |   | (Yes;No) |
|--------------------|---|----------|
| Q84                | Is there a national level registry?   | Yes      |
| Q85                | If answer was yes, is the registry used only for disused/spent SRS?   | No       |
| Q87                | Are there regional-level registries (one or more)?  | No       |
| Q90                | Are there local-level registries (one or more)?   | Yes      |
| Q115               | If the answer was yes, are any registries used only for disused/spent SRS?  | Yes      |
| Procedures         |   | (Yes;No) |
| Q91                | Does your Country have documented procedures in place to ensure that sealed radioactive sources (SRS) are transferred to secure facilities in a timely manner after their user declares them to be spent? | Yes      |
| Agreements         |   | (Yes;No) |
| Q93                | Government to Government agreements   | No       |
| Q94                | Government - Supplier agreements  | No       |
| Q95                | Supplier-User agreements  | Yes      |
| Q97                | Do any agreements include suppliers that are outside of your Country?   | Yes      |
| Release / Disposal |   | (Yes;No) |
| Q99                | Does your Country have any regulations to free-release spent sealed radioactive sources (SRS)?  | No       |
| Q100               | Has your Country disposed of spent SRS in existing disposal facilities for LILW or HLW waste?   | No       |
| Q101               | Does your Country plan to dispose of spent SRS in existing or planned disposal facilities for LILW or HLW waste?  | Yes      |
| Q102               | Has your Country implemented dedicated disposal facilities for spent SRS?   | No       |
| Q103               | Does your Country have plans to implement dedicated disposal facilities for spent SRS?  | No       |
| Import-Export      |   |          |
| Radioactive Waste  |   | (Yes;No) |
| Q104               | Does your Country have laws or Regulations restricting either the import or export of radioactive waste (excluding spent fuel)?   | Yes      |
| Spent Fuel         |   | (Yes;No) |
| Q105               | Does your Country have laws or Regulations restricting either the import or export of spent fuel?   | Yes      |

## Policies

Country: BRAZIL

Reporting Year: 2005

**Liquid HLW****Storage****(Yes;No)**

Q106 Does your Country have high-level liquid wastes in storage? No

**UMMT****Responsibility****(Yes;No)**

Q110 Does your Country have any Uranium Mine and Mill Tailings sites that do not have a designated authority to manage them? No

**Decommissioning****Funding****(Yes - All;Yes - Some;No)**

Q111 Does your Country require that funds should be set aside in support of future waste management activities, such as decommissioning activities? Yes - Some

**Facilities****(Yes;No)**

Q119 Does Your Country have any nuclear fuel cycle facilities? Yes

Q120 Does Your Country have any nuclear applications facilities (non fuel cycle facilities)? Yes

**Timeframe****(Yes - All;Yes - Some;No)**

Q112 Does your Country require a time frame for the decommissioning of nuclear fuel cycle facilities once these facilities cease operation? Yes - Some

Q113 Does your Country require a time frame for the decommissioning of non-nuclear fuel cycle facilities once these facilities cease operation? Yes - Some



# Waste Management Infrastructure and Financing

Country: BRAZIL

Reporting Year: 2007

## National Infrastructure

|                                  |  |
|----------------------------------|--|
| Nuclear Energy Context:          |  |
| Research & Development:          |  |
| Policies and Programs:           |  |
| Decommissioning and Dismantling: |  |
| Legal Framework:                 |  |
| Planned Improvements:            |  |

## National Financing

|                        |  |
|------------------------|--|
| Nuclear installations: |  |
| Legacy Wastes:         |  |
| Medical installations: |  |
| Extractive Industries: |  |
| Additional Comments:   |  |

# Waste Management Infrastructure and Financing

Country: BRAZIL

Reporting Year: 2007

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Reporting Year: 2007

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Country: BRAZIL

Reporting Year: 2007

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# Waste Management Infrastructure and Financing

Country: BRAZIL

Reporting Year: 2007

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# Waste Management Infrastructure and Financing

Country: BRAZIL

Reporting Year: 2007

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## National Financing

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