Industrial Solid Waste Management Plan

2025

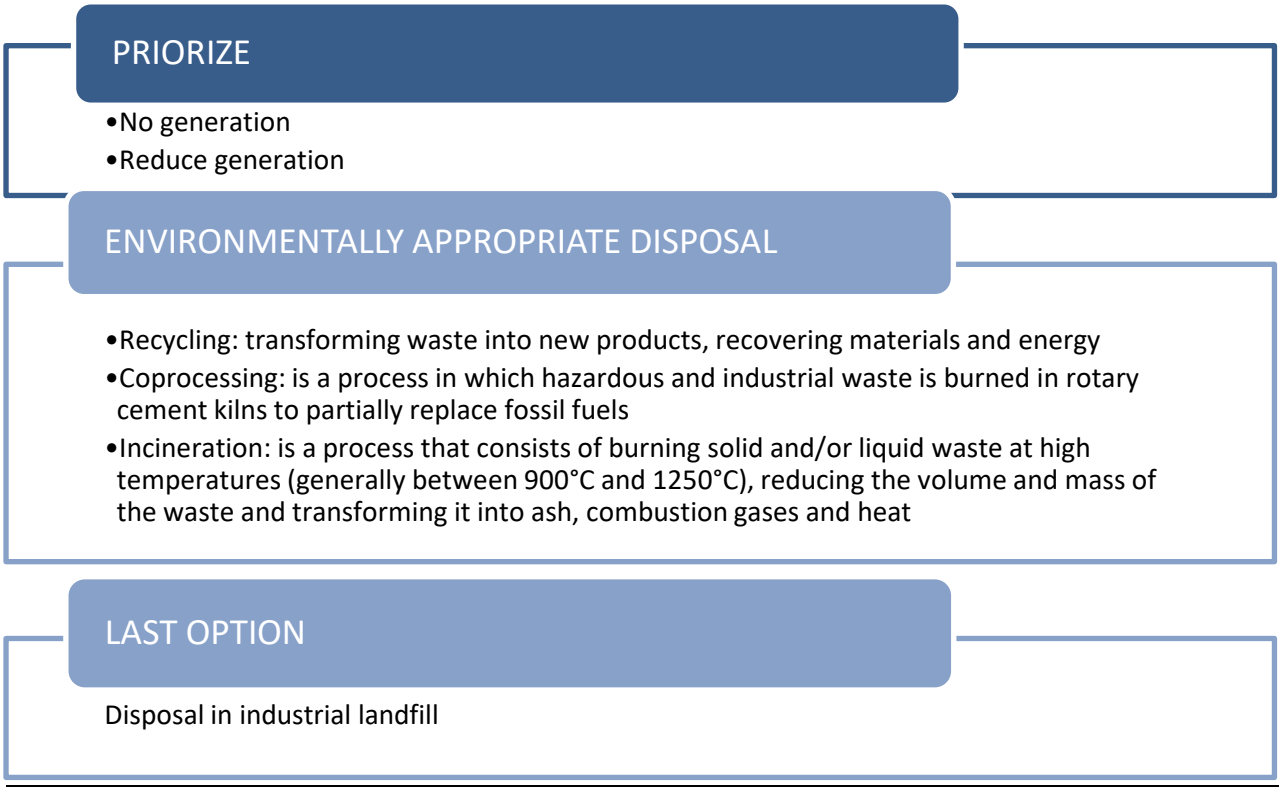
1. Introdução

Cemig has a waste management plan that includes the stages of identification, segregation, packaging, search for reuse and reduction, and final disposal, always with the aim of identifying opportunities to improve performance in relation to the issue.

In line with the National Solid Waste Policy (PNRS), the Company maintains a structured system for collection, tracking, and environmentally appropriate final disposal, always seeking to minimize impacts and maximize the reuse of materials.

Maintenance activities on distribution lines and networks are responsible for the majority of waste generation, with oily waste and waste contaminated with insulating mineral oil being the main portion of hazardous waste generated by the Company. As an action plan to reduce impact, procedures are adopted to reduce oil leaks in equipment and the recycling of insulating mineral oil as a destination, prioritizing its reuse after regeneration.

Prioritization Model:



Waste Management Process Steps:

Compliance with legal requirements at all stages					
1 -Segregation	2- Collection and packaging	3- Labeling	4- Transportation	5-Storage	6-Final disposal

Proper storage:

Most of the waste generated by the Company has commercial value, which reinforces the potential for return within a circular economy logic. Materials such as metal scrap, cables, wires and poles are carefully handled, stored and transported to the Igarapé Advanced Distribution Center (CDA-IG), where they are prepared for final disposal.

Figure 1: Hazardous storage warehouse (Class I) external view

Figure 2: Hazardous storage warehouse (Class I) internal view

Figure 3: Non-hazardous waste storage area (metal scrap)

Figure 4: Non-hazardous waste storage area (metal scrap)

Final Destination History

Final Destinatio (t)	2021	2022	2023	2024
Disposal, recycling and regeneration, reuse or decontamination (in tons)	**49.943**	**43.860**	**60.755**	**53.160**
Co-processing, Treatment (effluents and sludge), disposal in industrial landfill and incineration (in tons)	**201**	**103**	**142**	**400**
Total	**50.144**	**43.963**	**60.897**	**53.560**

Additional information in the Annual Sustainability Report, pages 118 to 120, available at link: https://www.cemig.com.br/en/wp-content/uploads/sites/7/2025/06/ras-2024-en.pdf

2. Actions that promote the circular economy:

The waste management process aims to reduce impacts, prioritize initiatives aligned with the concept of circular economy, in order to avoid final disposal in industrial landfills.

Waste reduction initiatives and strategic targets

Cemig has set ambitious targets for waste management:

- **Reduction of total waste disposed:** Cemig's target is to reduce 5% compared to 2023 by 2027. In 2024, there was an 11% reduction in the generation of hazardous waste compared to 2023.
- **Reduction of hazardous waste:** Target of reducing the generation of hazardous waste by 50% by 2028, using 2020 as the base year. In 2024, there was a 61% reduction in the generation of hazardous waste compared to 2023.
- **Reuse/recycling of 99.5% of waste:** The company aims to achieve a reuse and recycling rate of 99.5% of the waste generated, further reducing the amount of materials sent to landfills. In 2024, we will achieve 99.3% reuse/recycling of waste.

To achieve these targets, Cemig invests in innovative solutions, such as:

- **Oil Regeneration:** Cemig invests in oil regeneration, a process that allows transformer oil to be reused, reducing the need for disposal and decreasing environmental impact.

- **Biodegradable Vegetable Oil Transformers:** Cemig replaces traditional transformers with models that use biodegradable vegetable oil. This innovative solution significantly reduces the environmental impact in the event of accidents, as vegetable oil decomposes naturally, preventing soil and water contamination.

- **Transformer refurbishment:** the process consists of recovering distribution transformers so that they can be used again in the company, reducing the need to purchase new transformers. In 2024, 233 transformers were refurbished, avoiding the demand for new raw materials.

- **Compact Substations:** Cemig implements compact substations that take up less physical space and generate less waste during construction. This solution contributes to optimizing land use, reducing environmental impact, and minimizing substation installation time.

CEMIG is an organization that uses a significant amount of wood to store materials, which results in a considerable volume of waste. In 2024, the company generated 1,631 tons of wood waste.

The disposal of this waste is carried out in an environmentally correct manner, reflecting CEMIG's commitment to sustainability. The wood waste is sent to a company specialized in recycling. At this company, the wood is transformed into chips, which are later sold.

This recycling practice prevents wood from being improperly disposed of in inappropriate places or burned in an uncontrolled manner, which could cause air pollution and several other negative environmental impacts. Furthermore, by recycling wood, CEMIG contributes to reducing the need for deforestation, since it reduces the demand for new wood that would otherwise be used as fuel in industrial processes.

By adopting different technologies for waste treatment, CEMIG demonstrates its commitment to environmental preservation and sustainability. The company not only minimizes negative impacts on the environment, but also promotes the reuse of resources, fostering a circular economy. This effort is an integral part of CEMIG's initiatives to ensure a more sustainable and balanced future, aligning its operations with the principles of environmental responsibility. In 2024, R$42,119,404.27 was obtained from the sale of waste and other materials with high reuse value, such as copper, iron and aluminum.

3. Training and Engagement

Cemig also invests in training its employees in waste management:

• Online Training: The company provides online training on solid waste management at its Corporate University, focusing on the environmental performance of employees inside and outside the corporate environment.

• Procedural Instructions: Cemig provides a series of procedural instructions on its corporate intranet that make up the Corporate Waste Management Program, guiding employees on correct waste management practices.

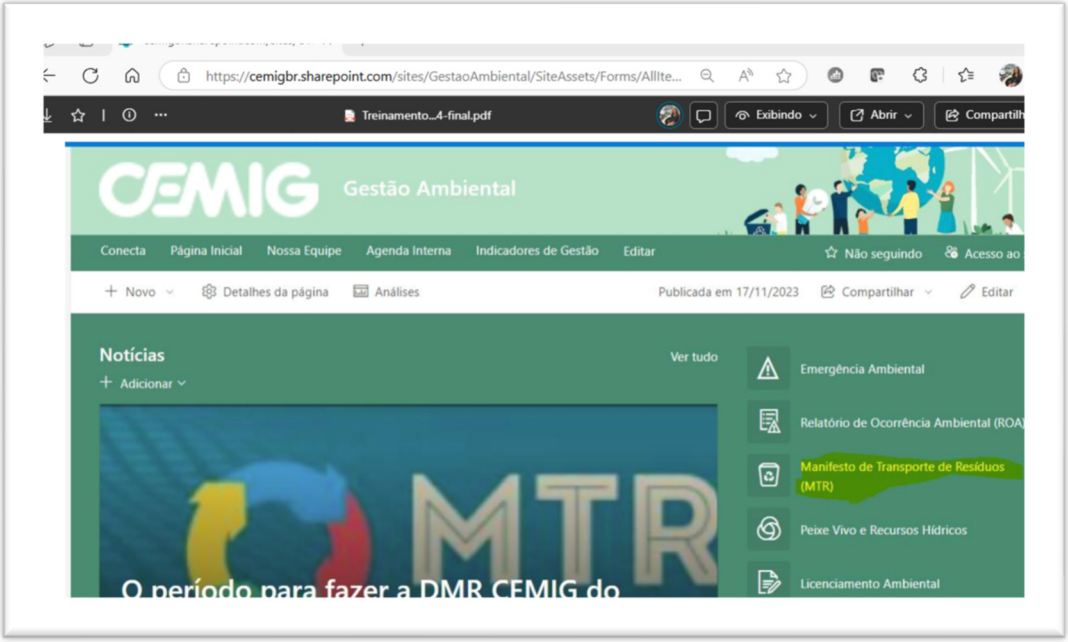
Strengthening partnerships for success:

- **Best Suppliers Award:** Every year, we hold the Best Suppliers Award, highlighting ESG practices. Waste management is one of the main evaluation criteria, recognizing suppliers that are dedicated to:
  - Increasing the recycling rate: seeking innovative solutions to repurpose materials, reducing environmental impact.
  - o Promote the efficient use of resources: optimizing the use of materials and seeking alternatives for reuse, generating benefits for both the environment and the economy.
  - Adopt sustainable practices: implementing measures that reduce waste generation and minimize the environmental impact of its operations.

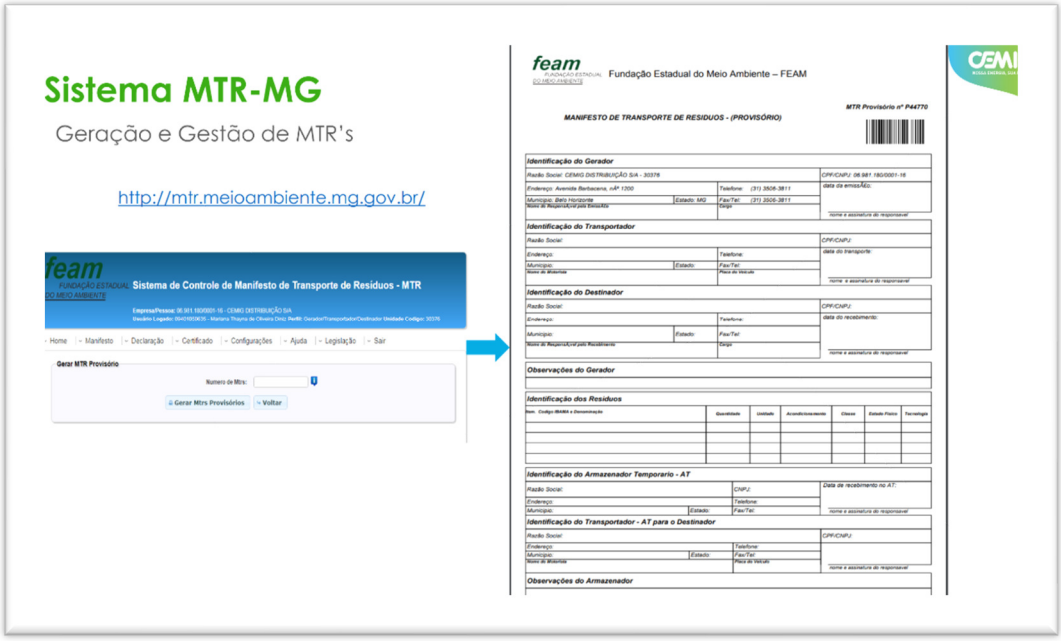
Training materials

Waste Management Primer, available at the link: cemig.com.br/wp-content/uploads/2021/11/cartilha-gerenciamento-de-residuos.pdf

Training on Hazardous Waste Transport Manifest (MTR) in January 2024, available online.

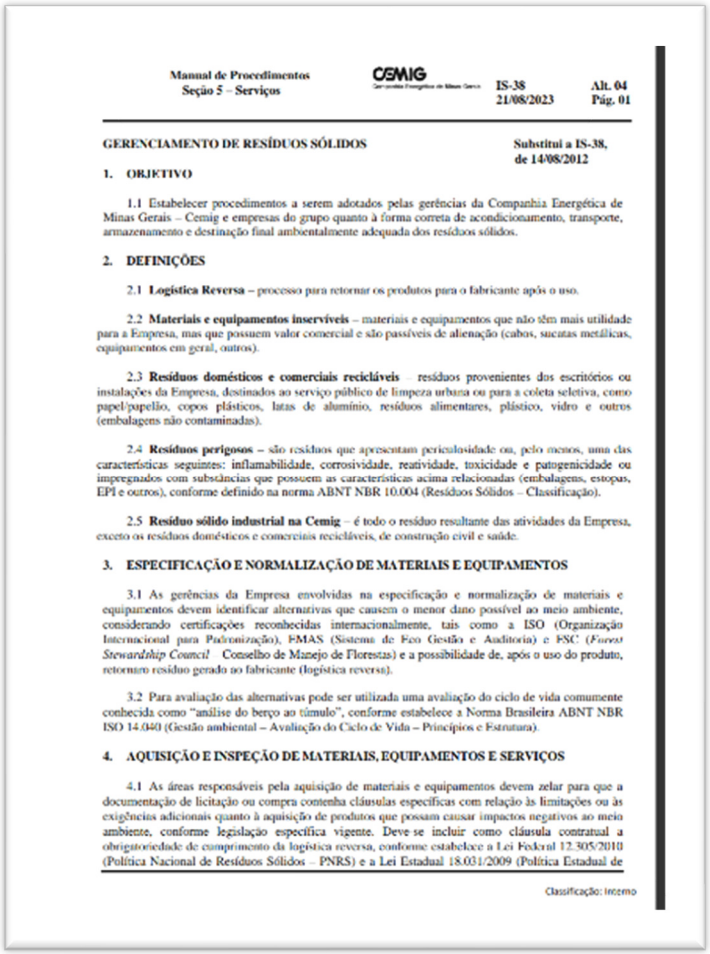


MTR-MG System Page for MTR consultation - [Waste Transport Manifest System]



Standards and procedures

Service Instruction (IS-38): Establish procedures to be adopted by the management of Companhia Energética de Minas Gerais – Cemig and group companies regarding the correct way of packaging, transporting, storing and environmentally appropriate final disposal of solid waste.



Manual de Procedimentos
Seção 5 – Serviços

CEMIG

IS-38 Alt. 04
21/08/2023 Pág. 01

GERENCIAMENTO DE RESÍDUOS SÓLIDOS

Substitui a IS-38, de 14/08/2012

1. OBJETIVO

1.1 Estabelecer procedimentos a serem adotados pelas gerências da Companhia Energética de Minas Gerais – Cemig e empresas do grupo quanto à forma correta de acondicionamento, transporte, armazenamento e destinação final ambientalmente adequada dos resíduos sólidos.

2. DEFINIÇÕES

2.1 **Logística Reversa** – processo para retornar os produtos para o fabricante após o uso.

2.2 **Materiais e equipamentos inservíveis** – materiais e equipamentos que não têm mais utilidade para a Empresa, mas que possuem valor comercial e são passíveis de alienação (cabos, sucatas metálicas, equipamentos em geral, outros).

2.3 **Resíduos domésticos e comerciais recicláveis** – resíduos provenientes dos escritórios ou instalações da Empresa, destinados ao serviço público de limpeza urbana ou para a coleta seletiva, como papel/papelão, copos plásticos, latas de alumínio, resíduos alimentares, plástico, vidro e outros (embalagens não contaminadas).

2.4 **Resíduos perigosos** – são resíduos que apresentam periculosidade ou, pelo menos, uma das características seguintes: inflamabilidade, corrosividade, reatividade, toxicidade e patogenicidade ou impregnados com substâncias que possuem as características acima relacionadas (embalagens, estopas, EPI e outros), conforme definido na norma ABNT NBR 10.004 (Resíduos Sólidos – Classificação).

2.5 **Resíduo sólido industrial na Cemig** – é todo o resíduo resultante das atividades da Empresa, exceto os resíduos domésticos e comerciais recicláveis, de construção civil e saúde.

3. ESPECIFICAÇÃO E NORMALIZAÇÃO DE MATERIAIS E EQUIPAMENTOS

3.1 As gerências da Empresa envolvidas na especificação e normalização de materiais e equipamentos devem identificar alternativas que causem o menor dano possível ao meio ambiente, considerando certificações reconhecidas internacionalmente, tais como a ISO (Organização Internacional para Padronização), FMAS (Sistema de Eco Gestão e Auditoria) e FSC (*Forest Stewardship Council* – Conselho de Manejo de Florestas) e a possibilidade de, após o uso do produto, retornarо resíduo gerado ao fabricante (logística reversa).

3.2 Para avaliação das alternativas pode ser utilizada uma avaliação do ciclo de vida comumente conhecida como "análise do berço ao túmulo", conforme estabelece a Norma Brasileira ABNT NBR ISO 14.040 (Gestão ambiental – Avaliação do Ciclo de Vida – Princípios e Estrutura).

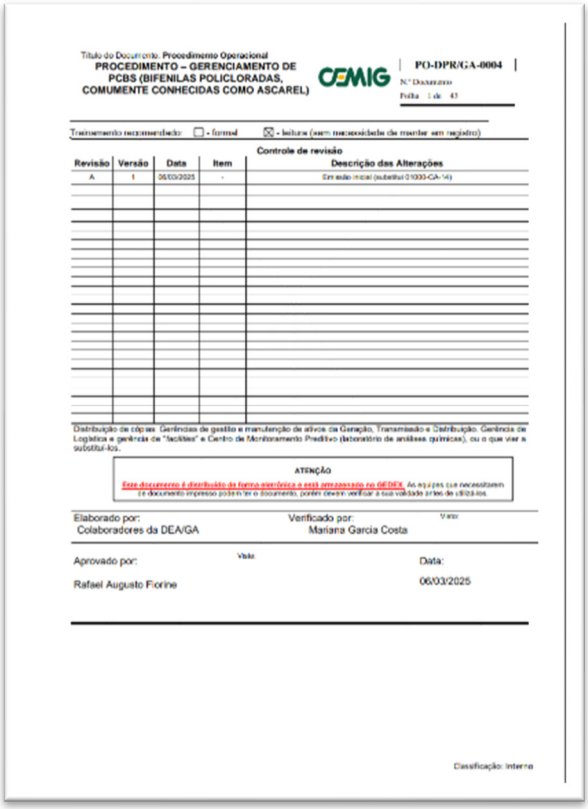
4. AQUISIÇÃO E INSPEÇÃO DE MATERIAIS, EQUIPAMENTOS E SERVIÇOS

4.1 As áreas responsáveis pela aquisição de materiais e equipamentos devem zelar para que a documentação de licitação ou compra contenha cláusulas específicas com relação às limitações ou às exigências adicionais quanto à aquisição de produtos que possam causar impactos negativos ao meio ambiente, conforme legislação específica vigente. Deve-se incluir como cláusula contratual a obrigatoriedade de cumprimento da logística reversa, conforme estabelece a Lei Federal 12.305/2010 (Política Nacional de Resíduos Sólidos – PNRS) e a Lei Estadual 18.031/2009 (Política Estadual de

Classificação: Interno

Procedure: Management of PCBs (Polychlorinated Biphenyls)

Sets criteria for handling, packaging, storage, transportation, final disposal and procedures in the event of accidents involving equipment, materials, fluids and waste with PCB levels greater than or equal to 50 mg/kg or with a level greater than 100 µg (one hundred micrograms) of total PCB per dm² (square decimeter) of impermeable surface, hereinafter referred to as PCB-contaminated, PCB or Askarel. There are also aspects related to contamination prevention, so it also applies to insulating fluid oils with PCB levels lower than 50 mg/kg (non-PCB or PCB-free), When applicable.



Título do Documento: Procedimento Operacional
PROCEDIMENTO – GERENCIAMENTO DE PCBS (BIFENILAS POLICLORADAS, COMUMENTE CONHECIDAS COMO ASCAREL)
CEMIG | PO-DPR/GA-0004 |
Nº Documento
Folha 1 de 43

Treinamento recomendado: ☐ - formal ☒ - leitura (sem necessidade de manter em registro)

Controle de revisão

Revisão	Versão	Data	Item	Descrição das Alterações
A	1	06/03/2025	-	Emissão inicial (substitui 01000-GA-14)

Distribuição de cópias: Gerências de gestão e manutenção de ativos da Geração, Transmissão e Distribuição, Gerência de Logística e gerência de "facilities" e Centro de Monitoramento Preditivo (laboratório de análises químicas), ou o que vier a substituí-los.

ATENÇÃO

Este documento é distribuído de forma eletrônica e está armazenado no GEDEX. As equipes que necessitarem de documento impresso podem ler o documento, porém devem verificar a sua validade antes de utilizá-los.

Elaborado por: Colaboradores da DEA/GA
Verificado por: Mariana Garcia Costa
Visto:
Aprovado por: Rafael Augusto Fiorine
Visto:
Data: 06/03/2025

Classificação: Interno

4. Environmental Education

The Corporate Environmental Education Program (ECOCIENTE), created in 2024, aims to train and raise awareness among internal and external audiences, playing a role in influencing society and its employees. The prioritized topics are: conservation of fauna, flora and water resources, in addition to waste management, and are carried out through monitoring, rescue and salvage programs, area recovery and vegetation recomposition, as well as numerous Research and Development projects conducted in partnership with public and private institutions. The essential purpose of all these activities is to build effective strategies to avoid, reduce, mitigate or compensate for damage to the environment inherent to any production process, such as the generation, transmission and distribution of energy. (Cemig)

Activities related to waste management: Employees from the regional offices in Lavras and Uberlândia were invited to participate in training on the topics of "fires" and "solid waste". In total, 4 training sessions were held, attended by 71 participants.

Source: Performance Report – Ecociente 2024 Program, pages 1, 2 and 8), available at the link: https://www.cemig.com.br/wp-content/uploads/2025/03/relatorio-ecociente-2024.pdf