


## Implementation of NR 38 in urban cleaning companies

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### ABSTRACT

Urban cleaning and waste management are activities with several associated risks, whether physical, chemical, biological, ergonomic, accident and/or psychosocial. Thus, it was necessary to create a sectoral standard for Occupational Safety, to provide guidelines, regulate and guarantee the physical and mental health of these workers. Even with the use of other existing regulatory standards, these do not include all the activities performed by the category, such as: provision and maintenance of infrastructures and operational facilities for collection, manual and mechanized sweeping, urban cleanliness and conservation, transportation, transshipment, treatment and final disposal of solid waste from urban cleaning. In this context, the objective of this study is to analyze the impact of NR 38 on the safety and health of workers involved in urban cleaning and solid waste management activities. For this, the methodology adopted in this was a descriptive case study, based on bibliographic reviews found on the theme of urban cleaning and with the collection of data regarding accidents that occurred in the sector, showing high rates of accidents and deaths resulting from the activity. As a result, an awareness plan on NR 38 was proposed, where we contextualized the necessary training, awareness campaigns, the internal commission for the prevention of accidents and harassment - CIPA - NR 05, communication channels and incentives. However, an action plan was also prepared highlighting the main costs of adaptation and detailing the steps necessary to successfully implement NR 38 in an urban solid waste collection company.

**Keywords:** Urban cleaning agents, Urban cleaning, Work accidents, Regulatory standards, NR 38, Occupational health, Urban cleaning system, Urban waste, Waste collection and risks.

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## INTRODUCTION

Occupational health and safety standards are constantly updated, thanks to advances in the prevention of accidents and occupational diseases. Therefore, the standards are updated whenever any point of improvement is identified, as well as new regulatory standards are created and published, as is the case of NR 38.

It is important to understand that NR 38 deals with how urban cleaning work should be carried out. In this sense, it aims to regulate in a safe and healthy way the activities carried out by workers in this area. The objective of this study is to analyze the impact of NR 38 on the safety and health of workers involved in urban cleaning and solid waste management activities.

According to Fundacentro, the urban cleaning processes include the activities, provision and maintenance of infrastructures and operational facilities for collection, manual and mechanized sweeping, urban cleanliness and conservation, transportation, transshipment, treatment and final disposal of solid waste from urban cleaning. To this end, it is important to understand how the implementation of NR 38 can change health and safety issues for workers in these activities and how companies should make them aware and adapt to the new requirements.

The methodology addressed will be a case study, of a descriptive nature of the urban cleaning process, since NR 38 defines as the company's responsibility the implementation of occupational health and safety actions for the functions performed by the workers. To complement the study, a literature review will be carried out as a fundamental basis.

Through the literature review, it was possible to collect data on work accidents and occupational diseases related to urban cleaning and solid waste management activities before the implementation of NR-38 and through this information it was possible to evaluate the impact of NR 38 on the health and safety of workers.

Finally, it is expected that after the period of adaptation of companies in this field, regarding the obligations of NR 38, the number of accidents of diseases resulting from work can be significantly reduced, improving the environment for workers in urban cleaning and solid waste management.

## THEORETICAL BACKGROUND

### BASE LEGAL

The Regulatory Standards were created to complement the provisions given by the Consolidation of Labor Laws (CLT), through Law No. 6,514/1977, which establishes standards related to Occupational Safety and Medicine. The NR's integrate the obligations, rights and duties that must be followed by companies and their employees to ensure occupational health and the prevention of occupational diseases and accidents.



Published on December 16, 2022, Regulatory Standard 38 was created to improve the safety conditions of urban cleaning workers, in view of the high degree of risk to which they are exposed on a daily basis, due to contact with various types of waste, hazardous and non-hazardous, and occupational risks.

The National Solid Waste Policy (PNRS), established by Federal Law No. 12,305/10, which stipulates guidelines and management goals for the correct processing of waste before its final disposal. In order to prevent materials, which can still be reused, from being incorrectly disposed of, stimulating the creation of new techniques to reduce and optimize processes.

Urban cleaning workers are at the mercy of several risks and with that, it is necessary to have legislation that contributes to the prevention of accidents and diseases resulting from the activity, as well as it is essential that they are applied by contractors and inspected.

### MAIN ADAPTATIONS OF COMPANIES IN THIS FIELD

According to NR 38, organizations that develop urban cleaning and solid waste activities must comply with the obligations requested by the new NR 38 among the various requests, below are some of the mandatory items:

- Companies must keep an up-to-date record of all the places in which they carry out their activities, by route, service front or collection points, with identification of the support points, their characteristics and definition of the type of service provided to workers.
- For activities that expose employees to the risk of traffic accidents on public roads, a safety procedure must be implemented, including warning signs, observing the activities carried out and complying, as applicable, with traffic regulations.
- The PCMSO should provide for an active immunization program, especially against tetanus and hepatitis B. If there is a risk assessed in the PGR, it should establish a specific procedure for the case of an occupational accident involving sharps, with or without the worker's absence, including monitoring of the clinical evolution of the worker's condition.
- In relation to vehicles, machinery and equipment, danger zones and moving parts must have protections in order to prevent the access of parts of the worker's body, and can be removed only for cleaning, lubrication, repair and adjustment, and then must be replaced.
- All tree pruning work must be preceded by a Risk Analysis - RA.
- The organization must train employees, observing the activity carried out and the risks to which they are exposed. Initial training should be divided into theoretical and practical parts. In addition to the initial training, the worker in the tree pruning activity must be trained in the safe operation of machinery in accordance with NR 12.



- The organization must provide PPE free of charge, without prejudice to the provisions of Regulatory Standard No. 06, must provide personal protective devices under the terms established by NR 38, and provide work clothing.

According to the founder of the school of prevention website, Herbert Bento (2023), one of the difficulties of the urban cleaning professional is places with many people. That is why there are rules that apply to the sweeping and washing of fairs, roads and public places in general. It is worth noting that, in these situations in which the worker is exposed on public roads, it is necessary to place warning signs to avoid possible accidents, Likewise, weeding, mowing and pruning trees are also activities that can harm the physical integrity of the worker and need greater care.

According to writer Pontotel (2023), understanding Regulatory Standard 38 and its importance is essential for all companies that perform solid waste cleaning and management activities. This standard plays a key role in creating a safer work environment, preventing accidents, and avoiding potential consequences.

This rule comes into force as of January 2, 2024, according to MTP Ordinance No. 4,101, of December 16, 2022, so companies in this field of activity will have a period to adapt to the requirements established in the new NR 38.

### RELATIONSHIP OF NR 38 WITH THE OTHER NORMS

The Regulatory Standards are classified into: general, special and sectoral. According to Ordinance No. 787, of November 27, 2018, general regulations are those that can be applied to any economic activity. The special ones take into account the equipment used, the function and the facilities. The sectoral ones, on the other hand, give guidelines for companies that operate in specific activities, as is the case of the standard addressed.

Prior to the creation of NR No. 38, other Regulatory Standards were already used to meet the work safety demands of urban cleaning companies. Campos (2016) cites seven, they are: NR No. 01 - General Provisions and Management of Occupational Risks, NR No. 05 - Internal Commission for the Prevention of Accidents and Harassment (CIPA), NR No. 06 - Personal Protective Equipment (PPE), NR No. 15 - Unhealthy Activities and Operations, NR No. 17 - Ergonomics, NR No. 21 - Open Air Work and NR No. 24 - Sanitary and Comfort Conditions in the Workplace. However, the regulations that were applied did not understand the total complexity of the services performed by the urban cleaning agents.

Rosa (2018) evaluates that the main points addressed by the new NR are: the prohibition of urban cleaning agents from moving in the back of the collection truck, item 38.6.1, and the adoption of support points for external workers, item 38.3.2.



NR 38 began to centralize some of the main points previously used, based on general standards and some special ones, delving into the plurality of functions and risks encompassed in the urban cleaning and solid waste management sector.

## **MATERIALS AND METHODS**

This article adopts the case study method to analyze the current situation of occupational accidents and occupational health of urban cleaning workers, considering the new Regulatory Standard No. 38. The research seeks to deepen the understanding of the complex aspects related to urban cleaning, following the recommendation of Yin (2015, p. 33) to deeply explore the phenomenon of specific study, enabling the identification of the most abstruse aspects.

This research is also characterized by being descriptive of the urban cleaning process. Prodanov & Freitas (2013, p.70) approaches this method so that the research provides greater knowledge about the problem, aiming to be clearer and building hypotheses for this case study.

According to Herbet Bento (2023), the main motivator for the creation of an NR is the high rate of accidents in a given sector of the economy.

According to data taken from the website of Revista Proteção (2022), data collected through the CAT (Work Accident Communication) database record three accidents per day in the sector, in the period from January 2011 to December 2020, so there are about 10 thousand accidents per year among these professionals, which refers to an average of one death every 10 days.

Based on this understanding, it will be verified through the literature review what will change in relation to the health and safety of workers in this area, after publication of the new NR 38.

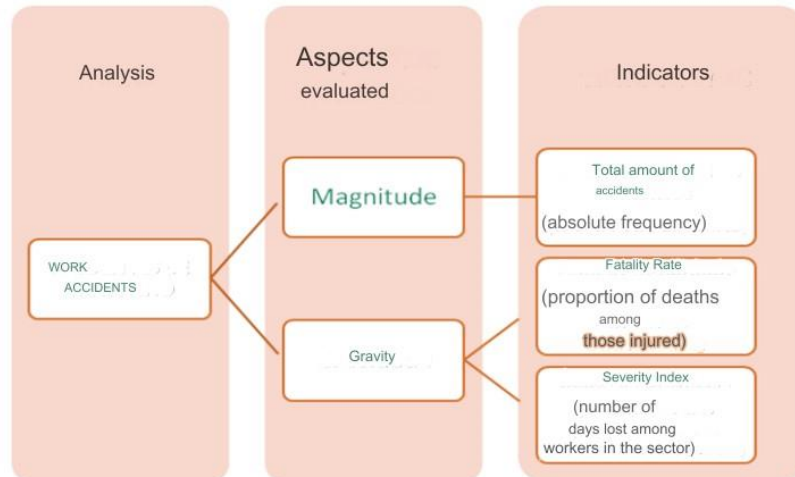
## **RESULTS AND DISCUSSIONS**

### **ANALYSIS OF COLLECTED DATA**

Through the Regulatory Impact Analysis Report for the urban cleaning and solid waste management sector, published by the Ministry of Labor and Social Security, the Secretariat of Labor and the Undersecretary of Labor Inspection, we obtained the following information regarding accidents in this sector.

The evaluation of occupational accidents should consider two main aspects: the magnitude of the accidents and the severity of these events. Therefore, indicators were used to measure each of these aspects, as shown in Figure 01.

Figure 01 - Indicators evaluated in the analysis of accidents



Source: RIA Study Group.

Regarding the magnitude of occupational accidents, between January 2011 and December 2020, approximately 98 thousand accidents were recorded in the urban cleaning and solid waste management sector. The median was 10,172 accidents per year, with a mean of 9,763 accidents and a standard deviation of 787. On average, 3 accidents were recorded per day. In addition to the analysis of the absolute number, it is necessary to know the expected evolution of occupational accidents through the analysis of time series, making it possible to know the trend and future projection of accidents related to the urban cleaning and solid waste management sector.

In summary, the main information on occupational accidents in the sector, recorded through the CAT, between January 2011 and December 2020, including the trend and projection of these accidents until 2031., as shown in Figure 02.

Figure 02 - Main information on occupational accidents in the urban cleaning and solid waste management sector, between 2011 and 2020, recorded through CAT



Fonte: CAT - SIT.

These data show the magnitude of the effects related to the existence of the regulatory problem, revealing that accidents will continue to occur if actions are not taken.

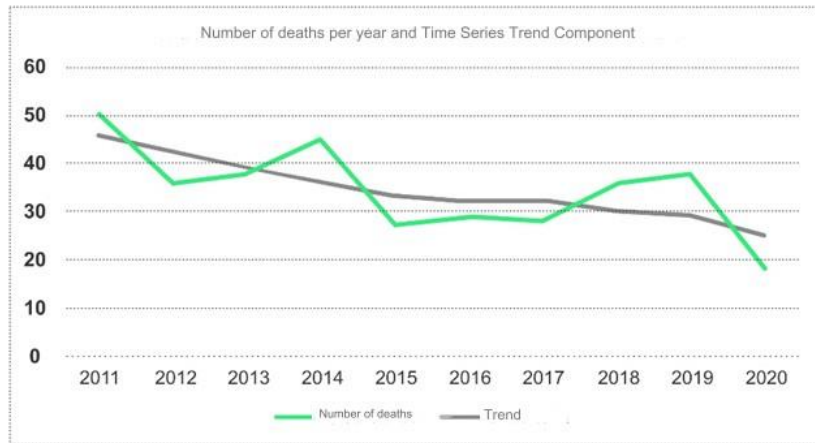
The analysis of the severity of accidents allows the evaluation of the impact of the injury caused by the occupational accident, and is measured by the following indicators:

- ✓ absolute frequency of deaths;
- ✓ case fatality rate; and
- ✓ Severity index.

Between January 2011 and December 2020, 345 deaths were recorded in the urban cleaning and solid waste management sector, through the CAT, with a median of 36 deaths per year, an average of 35 deaths with a standard deviation of 9. On average, there is 1 worker death every 10 days in the urban cleaning and solid waste management sector.

When analyzing the trend component of the time series analysis, a slight trend of reduction in deaths recorded by CAT is observed in this sector. Figure 03 shows the number of deaths per year, as well as the statistical trend over the years.

Figure 03 - Number of deaths recorded through CAT, between 2011 and 2020, and time series trend component



Fonte: CAT - SIT.

Figure 04 presents the main information on the deaths of workers in the urban cleaning and solid waste management sector, between 2011 and 2020, including the trend is the projection of these accidents until 2031.

Figure 04 - Main information on deaths in the urban cleaning and solid waste management sector, between 2011 and 2020, recorded through CAT.

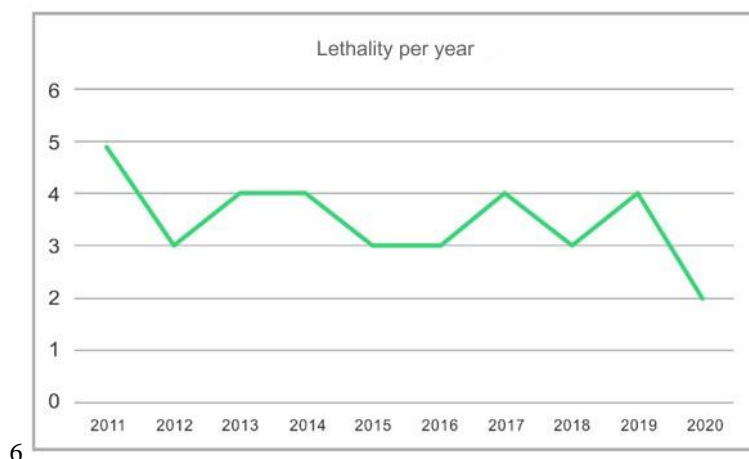


Fonte: CAT – SIT

Another important measure to be analyzed is the lethality rate, which represents the percentage of deaths among the injured, therefore, it represents an important indicator of the severity of accidents. The lethality analysis indicated a high value: an average of 4 deaths per thousand injured persons, therefore, for every thousand injured workers, four die. Figure 05 shows the case fatality rate per year, as well as the trend analysis of this indicator.



Figure 05 - Case fatality rate by year and trend



Fonte: CAT - SIT.

These data allow us to conclude that the urban cleaning and solid waste management sector caused a significant number of deaths. The trend analysis reveals a slight downward trend in recorded deaths, with between 146 and 342 workers killed by occupational accidents in this sector expected to be recorded over the next 10 years.

Based on the data presented, it is necessary that employees and employers are made aware of the importance of applying the requirements addressed in NR 38, to make the urban cleaning activity safer.

### AWARENESS PROPOSAL

Raising awareness among workers and employers about Regulatory Standard 38 (NR-38) is crucial to ensure safety and health in the workplace, as well as to prevent occupational accidents and diseases in activities related to urban cleaning and solid waste management.

NR-38 establishes the requirements and preventive measures that employers must adopt to protect employees involved in these activities. It is essential that both workers and employers are aware of these requirements and measures in order to comply with the standards and, consequently, ensure safety and health at work.

Through training, information campaigns, the Internal Commission for Accident Prevention (CIPA), effective communication channels and adequate incentives, it is possible to make workers and employers aware of the importance of NR-38 and the preventive measures that should be adopted. These initiatives contribute to promoting a safe and healthy work environment, as well as reducing the risks of occupational accidents or illnesses.



## Trainings

Conduct regular training with employees, addressing the main aspects of NR-38, such as: the relevance of safety and health in the workplace, the dangers related to urban cleaning and solid waste management tasks, and the preventive actions that must be adopted. Listed below are the main trainings that need to be conducted:

Table 1: Main trainings according to NR 38.

Training	Content	Workload	Frequency
<b>Theoretical integration</b>	- Working conditions and environment	4 hours	Before the start of activities
	- Hazards identified and risks assessed		
	- Use and conservation of PPE		
	- Ergonomic aspects of the job		
	- Procedures in case of accidents at work		
	- Notions of traffic safety signs		
<b>Practical Integration</b>	- Notions of first aid	4 hours	Before the start of activities
	- Cargo handling and handling		
	- Operation of machinery, equipment and tools		
	- Road safety signage		
<b>Tree Pruning</b>	- First aid	TBD	Before the start of activities
	- Tree cutting techniques		
<b>Safe Operation of Machinery</b>	- Safe body postures	TBD	According to NR-12
	- Safe operation of machines in accordance with NR-12		Periodical, at the discretion of the organization
	- Basic principles of occupational safety and health		
<b>Update</b>	- Related to work activities	TBD	When needed
	- Changes in working practices		

Source: The authors.

## Awareness Campaigns:

Promote awareness through graphic materials, such as posters, pamphlets, and videos, emphasizing the rights and responsibilities of both workers and employers in relation to NR-38. These initiatives can address issues such as the proper use of personal protective equipment (PPE), the importance of personal hygiene, and the correct management of solid waste.



## Internal Commission for the Prevention of Accidents and Harassment - CIPA - NR 05

Provide for the formation of a group that includes representatives of both workers and employers, with the purpose of supervising compliance with NR-38 standards and presenting suggestions to improve working conditions. This team would have the ability to conduct regular inspections, identify any potential risks, and recommend additional preventive measures.

## Communication Channels

Establish efficient communication channels between employees and employers, so that they can report any problems or suggestions related to safety and health at work. These channels can include suggestion boxes, periodic meetings, and an anonymous reporting system.

## Incentives

Recognize and encourage good practices related to safety and health at work, through awards, bonuses or other types of recognition. This can encourage employees and employers to engage in promoting a safe and healthy work environment.

These actions aim to make employees and employers aware of the importance of safety and health at work, contributing to the reduction of accidents and occupational diseases in urban cleaning and solid waste management activities.

## ACTION PLAN FOR THE IMPLEMENTATION OF NR 38

The following action plan details the steps necessary to successfully implement NR 38 in an urban solid waste collection company. It covers everything from initial assessment to ongoing maintenance of compliance with the standard.

Table 2: Estimated costs for the implementation of NR 38.

Stage	Description	Accountable	Time Frame (Days)	Cost Estimate (R\$)
<b>Initial Diagnosis</b>	Carry out a diagnosis of current conditions	Security Manager	15	\$10,000
<b>Initial Training</b>	Develop and deliver initial trainings	Training Sector	30	\$15,000
<b>Vehicle Suitability</b>	Adapt fleet vehicles to comply with NR 38	Maintenance Team	60	R\$ 200.000
<b>Ppe</b>	Purchase Personal Protective Equipment	Purchasing Sector	45	R\$ 60.000



<b>Monitoring</b>	Install security monitoring systems	IT Staff	30	\$15,000
<b>Awareness Campaign</b>	Create and promote awareness campaigns	HR Sector	90	R\$ 7,000 (per year)
<b>Continuous Evaluation</b>	Establish continuous evaluation procedures	Security Manager	30	R\$ 7,000 (per year)
<b>Regular Monitoring</b>	Initiate Regular Compliance Assessments	Security Team	60	-
<b>Reporting and Corrective Actions</b>	Generate assessment reports and implement corrective actions	Security Manager	45	-

Source: The authors.

### Cost Estimation

The implementation of NR 38 implies considerable expenses, which vary according to the size of the company and the complexity of the operations. Such expenditure may include:

- **Training costs:** This involves creating learning materials, hiring instructors, and allocating time to train employees.
- **Equipment retrofitting costs:** To ensure that the equipment meets safety standards, you may need to invest in upgrades or modifications.
- **Monitoring and auditing costs:** Implementing monitoring systems and conducting periodic audits have costs linked to staff and technology.
- **Periodic training costs:** Recurring trainings should be included in the annual budget.
- **Impact assessment costs:** Impact analysis and implementation of improvements also have associated costs.

The specific estimate of these costs depends on the characteristics of the company and should be calculated based on detailed calculations. It is important to highlight that these expenses are investments in worker safety and regulatory compliance, which can result in reduced expenses related to accidents and occupational problems. Therefore, the return on investment can be significant in the long run.

### FINAL THOUGHTS

NR 38 was established after several years of high rates of accidents and deaths in the urban cleaning sector, aiming to reduce them, improve working conditions and raise awareness for urban cleaning agents.

Thus, the importance of the correct implementation of the requirements pre-established in the standard is highlighted. Where it was possible to foresee the need to raise awareness of cleaning



agents and the adjustments that will be necessary for companies in the field, especially in terms of equipment, training and awareness.

It is observed that, with NR 38, the benefits for workers will be noticeable in the long term, with the attenuation of the numbers of occupational accidents, deaths and diseases. For companies, this will be reflected in costs, where initially, there will be an investment to meet the requirements proposed by the standard, but at the same time, a reduction in the payment of taxes, hospital costs, documentation and records of accidents and the absence of employees.

Based on the results obtained, it was found that the implementation of NR 38 will bring several benefits, both for workers, for entrepreneurs and public authorities. The implementation of the standard is not only a legal obligation, but also a crucial measure to protect workers, minimize risks and contribute to the quality of life in cities.

In view of the above, further studies on the implementation of the regulation in different Brazilian states are suggested, as well as the main difficulties encountered during the process. As well as more studies relating other standards to the activity and analyzing the rates of accidents, deaths and occupational diseases after the implementation of the requirements



## REFERENCES

1. Bento, H. (2023). Limpeza Urbana – Guia Do Profissional SST. Disponível em: <<https://blog.escoladaprevencao.com/nr-38-limpeza-urbana/>>. Acesso em 13 de outubro de 2023.
2. Brasil. (1977). Lei nº 6.514, de 22 de dezembro de 1977. Diário Oficial da União, Brasília, DF, 23 dez. 1977.
3. Brasil. (2018). Portaria nº 787, de 27 de novembro de 2018. Diário Oficial da República Federativa do Brasil, Brasília, DF, v. 233, n. 228, p. 71-72. 29 nov. 2018. Seção 1.
4. Brasil. (2022). Ministério do Trabalho e Emprego. Portaria nº 4.101, de 20 de dezembro de 2022. Diário Oficial da União, Brasília, DF, 21 dez. 2022. Seção 1, p. 1-7.
5. Brasil. (2010). Lei nº 12.305, de 2 de agosto de 2010. Diário Oficial da União, Brasília, DF, v. 147, n. 147-A, p. 3-9. 3 ago. 2010. Seção 1.
6. Campos, D. F. (2015). A profissão gari à luz dos direitos sociais do trabalho e das políticas públicas de proteção ao meio ambiente. Revista de Direito UNIFACEX, 6(1), 1-19.
7. De Resíduos Sólidos, S. E. S. No T. P. O. S. de L. U. E. M. (s.d.). Análise de Impacto Regulatório. Disponível em: <<https://www.gov.br/trabalho-e-emprego/pt-br/assuntos/inspecao-do-trabalho/seguranca-e-saude-no-trabalho/relatorios-air/relatorio-air-limpeza-urbana-manejo-residuos.pdf>>. Acesso em: 12 out. 2023.
8. Fundacentro. (2022). Tomada pública aborda futura NR sobre limpeza urbana. Disponível em: <<https://www.gov.br/fundacentro/pt-br/comunicacao/noticias/noticias/2021/dezembro/tomada-publica-aborda-futura-nr-sobre-limpeza-urbana>>. Acesso em 14 de outubro de 2023.
9. Pontotel. (2023). Tudo acerca da nova NR-38. Disponível em <<https://www.pontotel.com.br/nr-38/>>. Acesso em 13 de outubro de 2023.
10. Rosa, L. S. (2018). O impacto que a NR-37 pode causar no sistema de limpeza urbana do Distrito Federal. Monografia, Universidade de Brasília.
11. Prodanov, C. C., & Freitas, E. C. (2013). Metodologia do trabalho científico: métodos e técnicas da pesquisa e do trabalho acadêmico (2a ed.). Novo Hamburgo: Feevale.
12. Yin, R. K. (2015). Estudo de caso: planejamento e métodos (5a ed.). Porto Alegre: Bookman.