LOGO

Design and Public Policies: tools to guide the correct disposal of expired or unused medicines

Design e Políticas Públicas: instrumentos para para orientar o descarte correto de medicamentos vencidos ou em desuso

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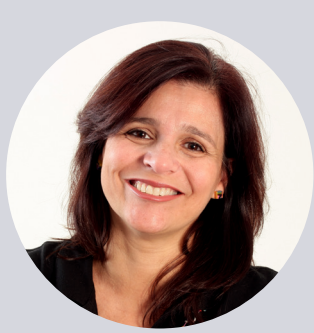

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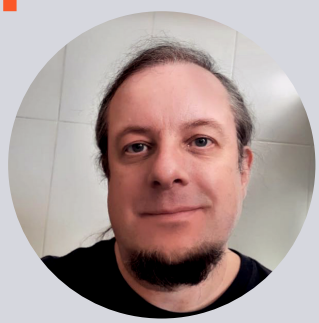

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ABSTRACT

The current context, linked to environmental pollution problems, presents several demands related to communication aimed at organizations and citizens to achieve better levels of environmental sustainability. Medicines for home use are products that require specific guidelines for consumption and disposal and have specific legislation that guides the disposal of their leftovers or those that are expired, due to their potential and pollution of the environment. In this regard, this study intends to demonstrate how Design plays an important role, guiding individuals on how to proceed with the correct disposal and mitigating the impact of environmental pollution by pharmaceuticals. As for the methods, it presents part of the results of a master's research characterized as qualitative, which made use of documentary and field research to obtain its data. The results demonstrate how communication is an important sector to be considered within a circular network for the effectiveness of Public Policies aimed at Solid Waste Management, especially with regard to the Disposal of Expired or Disused Medicines for Home Use. In this regard, there is Design as a tool to help consumers exercise their civic duty in their role in the shared responsibility for the life cycle of products provided for in the National Policy on Solid Waste.

KEYWORDS

Design; Public Policy; Solid Waste; Reverse Logistics; Medicines

RESUMO

O contexto atual, vinculado aos problemas de poluição do meio ambiente, apresenta várias demandas relacionadas à comunicação direcionada às organizações e cidadãos para se alcançar melhores patamares de sustentabilidade ambiental. Medicamentos de uso domiciliar são produtos que exigem orientações específicas para consumo e descarte e possuem uma legislação particular que orienta o descarte de suas sobras ou aqueles que se encontram vencidos, devido ao seu potencial e poluição do meio ambiente. Neste sentido, este estudo pretende demonstrar como o Design assume papel importante, orientando indivíduos a procederem com o descarte correto e mitigando o impacto da poluição do meio ambiente por fármacos. Quanto aos

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métodos apresenta parte dos resultados de uma pesquisa de mestrado caracterizada como qualitativa, que fez uso da pesquisa documental e de campo para obtenção de seus dados. Os resultados demonstram como a comunicação apresenta-se como um importante setor a se considerar dentro de uma rede circular para a efetividade de Políticas Públicas destinadas à Gestão dos Resíduos Sólidos, especialmente no tocante ao Descarte de Medicamentos de Uso Domiciliar Vencidos ou em Desuso. Neste sentido tem-se o Design, como ferramental para contribuir que consumidores exerçam seu dever cidadão na parte que lhes cabe na responsabilidade compartilhada pelo ciclo de vida dos produtos prevista na Política Nacional de Resíduos Sólidos.

PALAVRAS-CHAVE

Design; Políticas Públicas; Logística Reversa; Resíduos Sólidos; Medicamentos

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1 INTRODUCTION

Scarcity of natural resources and environmental pollution are problems that are ever more present in discussions about sustainability. The current model, known as a linear economic model (extract -produce – consume - dispose) is unsustainable with current consuming standards. According to WWF (2014) p.10, "for more than 40 years, humanity's demand on Nature's resources has exceeded the planet's biocapacity" (WWF, 2014, p.10). This disorganized and unplanned exploration has caused countless environmental, social and economic problems, showing that humanity utilizes natural resources beyond the ecosystem's support and replenishment capacity (MILLENNIUM ECOSYSTEM ASSESSMENT, 2005; WEETMAN, 2019; WHO, 2018).

The problems arising from waste generated in consuming processes are a relevant topic connected to this issue. In the present time, there is a significant accumulation of waste generated in post-consumption that exceeds the management capabilities of cities, be it due to infrastructure deficits or due to a culture rooted in a linear economic model that sends everything to landfills or garbage dumps, without the possibility of more sustainable destinations, which would send waste into a closed cycle, as proposed by a circular economic model.

Among the waste generated in post-consumption that affects public and ecosystem health, there are Expired or Disused Home Use Medicines. Medicines are pharmaceutical products, technically obtained or elaborated, with prophylactic, curative, palliative or diagnostic purposes (RDC 200, 2017), which are subject to specific legislation, especially with regard to their adequate disposal, as provided in the National Policy on Solid Waste of 2010 and Decree 10.388 of 2020.

These legislatory needs are due to the contaminant power of medicines when in contact with the environment. According to NBR 10004 (2004), the risk level of waste is determined by its physical, chemical, infectious or contagious properties, and can represent: a) risk to public health, causing mortality, the appearance of diseases or their spread, and b) risks to the environment, when waste is inappropriately managed.

As Brown (2019) states, the presence of pharmaceutical products in the environment is a growing problem, and one of global interest. We are living in a global crisis that may cause millions of deaths by 2050, of which the inadequate disposal of medicines is a contributing factor. According to the No Time to Wait: Securing the future from drug-resistant infections Report of April 2019, authored by the IACG – Interagency Coordination

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Group on Antimicrobial Resistance,

> "Medicine-resistant diseases already cause at least 700.000 deaths a year around the world, including 230.000 deaths by multidrug-resistant tuberculosis, a number that might rise to 10 million deaths a year around the world by 2050, in the most alarming scenario of total inaction. Approximately 2.4 million people may die in high-income countries between 2015 and 2050, if there isn't a sustained effort to curtail antimicrobial resistance" (WHO, 2019, p.4).

Corroborating this issue, the Lancet (2022) states that Antimicrobial Resistance (AMR) is one of the main causes of death around the world, being more prevalent in areas with more scarcity of resources. According to the authors of this study in the Lancet (2022), in 2019, 12.7 million deaths around the world were caused by bacteria resistant to pharmaceuticals.

The presence of antibiotics in the environment is alarming. According to data from a study by researchers from the University of York, in the United Kingdom, the concentration of antibiotics found in the rivers they studied is up to 300 times higher than safe levels (UNIVERSITY YORK, 2019). The most concerning, as Dr. John Wilkinson, one of the researchers in the study, points out, is that this is the first such study done on a global scale, that is, there are no other studies of this extent, revealing the absence of comprehensive research on the issue of antibiotics in aquatic environments. According to this author, "our study helps to fill this key knowledge gap with data being generated for countries that had never been monitored before" (UNIVERSITY YORK, 2019).

According to Bila and Dezotti (2003, p. 523), "many residual pharmaceuticals are resistant to many conventional water treatment processes." This issue is related to the concerns of the No Time to Wait: Securing the future from drug-resistant infections Report, which indicates,

> "Inadequate access to clean water, sanitation and hygiene in health care facilities, farms, schools, households and community settings; poor infection and disease prevention; lack of equitable access to affordable and quality-assured antimicrobials, vaccines and diagnostics; and weak health, food and feed production, food safety and waste management systems are increasing the burden of infectious disease in animals and humans and contributing to the emergence and spread of drug-resistant pathogens. (WHO, 2019, p.4).

Brown (2019) states that there are three main ways that pharmaceutical products end up in nature; they are: (1) patient use, through the

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organism's evacuation, they go through our bodies and into waterways; (2) inadequate disposal of leftover expired or disused medicines in the garbage, toilet or sink; and (3) waste from the pharmaceutical industry. According to Falqueto and Kligerman (2010), the pharmaceutical industry is a big source of waste from returns and recalls of medicines from the market, medicines rejected by quality control and losses from the process. Additionally, it is known that somewhere between 50% and 90% of ingested medicines are excreted by the organism, coming into contact with the natural environment (DEZOTTI 2003, TERNES, 1999).

It is important to note that there are many causes for the generation of leftover medicines which are inadequately disposed of by the consumer; the main ones are: random distribution of free samples, non-adherence or interruption of the therapeutic treatment proposed by a doctor, excessive self-medication, non-fractionation of packages, etc. Falqueto and Kligerman (2013) estimate that around 20% of medicines consumed at home are released into the sanitary sewage network or discarded with regular garbage.

Faced with the issue expressed here, the communications sector is understood to have a fundamental role in making it so individuals and organizations proceed correctly with regard to waste generated in either the production or consumption process, thus contributing to mitigate environmental impacts. Design, with its transversal character, can be considered a tool capable of contributing to the construction of communication projects that help spread Public Policies associated with the issue of inadequate disposal of Expired or Disused Home Use Medicines (EDHUM).

This study therefore aims to explore this matter, establishing how Design, through its fields of knowledge, tools and techniques, can be a tool for orienting citizens about the appropriate disposal of expired or disused medicines, orienting them to exercise their duty of shared responsibility for the life cycle of products, as provided in the National Policy on Solid Waste of 2010 and Decree 10.388 of 2020.

2 DESIGN AND PUBLIC POLICIES

Design and Public Policies are knowledge fields that can present many similarities when analyzed together. Based on the perspective of various authors, Souza (2006) defines Public Policies as a body of knowledge that sets a government to action. To the author, the formulation of Public Policies "are the stage where democratic governments translate their

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purposes and electoral platforms into programs and actions with real-world results or changes" (SOUZA, 2006, p. 26).

To the World Design Organization, Design is a strategic process of problem-solving that drives innovation, builds business success and leads to a better quality of life through innovative products, systems, services and experiences. To Papanek, everything we do, almost all the time, is design, so that Design is a basic item of all human activity.

Best (2018) states that there is a growing demand for a more holistic focus on the cultural, environmental, political and social impact generated by the modus operandi of organizations, thus highlighting the field of Design. Design is, by its nature, problem-solving through a people-centric perspective, providing a more integrative and holistic approach to solving modern worldwide challenges. Design and Public Policies are, therefore, two fields that are similar in how they seek solutions to complex problems. Mendonça (2019) presents commonalities that bring the areas together. To the author,

> "Both practices are, in essence, activities driven by some perceived challenge in reality, usually of a complex nature, possessing intentionality, that is, they want to lead to a better result than the present, thus generating value, and, to that end, they use various fields of knowledge or tools, seeking to give them a model to make their application possible". (MENDONÇA, 2019, p. 51).

Both Design and Public Policies are dedicated to seeking solutions to complex problems. Buchanan (1992) argues that most problems faced by designers are "wicked problems". According to this author, wicked problems are a class of problems in the social system that are badly phrased, with confusing information, where the interested parties have conflicting values and where all branches of the System appear in a confused and disconnected manner.

Design, in its aim to create value, is not limited to the realm of industry and businesses. When Bardach (1977), cited by Cavalcante et al (2019), defines the field of public policy as a body of knowledge of various disciplines of the humanities, with a focus on understanding and analyzing the concrete problems in politics, he brings it closer to Design. To this author, the complexity of the modern world cannot be limited to one perspective, it requires a dynamic and comprehensive approach, as practiced in the field of Design.

2.1 DESIGN, CITIZENSHIP AND WASTE DISPOSAL

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The term citizenship dates back to antiquity. The word comes from the latin civitas, which means a set of rights attributed to a citizen or city. To Fernandes (2013), p.145, in the dictionary of Public Policies, the terms citizen and citizenship refer to an individual who belongs to a community, having a set of rights and duties. Tuner, cited by Frascara (2009), states that citizenship must be defined as a set of legal, political, economic and cultural practices which make an individual a competent member of a community.

Rights must be communicated to citizens so that they may exercise their citizenship. "Informational Design" is a field of Design that can contribute to the transmission of rights and duties to citizens. One may say that Informational Design and citizenship are interdependent. To Redig (2004), "there is no citizenship without information, nor information without Design". According to the author, there is an intrinsic relationship between these two dimensions, where one cannot exist without the other. Adding to this matter, Frascara (2009) argues that all communication falls within the field of ethics. To the author, the act of communication requires knowledge of the other so that the process of communication is successful, and, as such, it is necessary to learn, understand and use the languages of given individuals so as to actively engage them in the process of dialogue. Frascara (2009) maintains that it is necessary to understand the values and motivations of individuals for this understanding of the other.

With the aim of leading individuals to adequate behaviors in their relationship to waste generated in post-consumption, it is important to understand the particularities of the process in relation to the citizen. Quadra (2019) presents an outline of consumer behavior in the act of disposal of Expired or Disused Home Use Medicines, which mainly occurs inadequately, in the garbage, toilet or sink. Another interesting observation in the study is about its similarity to previous studies, even those with a focus on first world countries, such as the United States and the United Kingdom. It is worth noting that these studies were developed in different time periods. Table 1 lists these studies and their findings.

Authors	Consumer behavior	Country of study
Quadros et al., (2019)	66% dispose of EDHUM with regular garbage	Brazil

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Authors	Consumer behavior	Country of study
Seehusen and Edwards (2006)	77.1 – 86% do not return EDHUM to pharmacies or health services, 53.8% dispose of them in the bathroom	United States
Vellinga et al.., (2014)	51% disposal in the garbage, 29% sink or 14% bathroom	Ireland
Bound and Voulvoulis (2005)	63.2% disposal of EDHUM in the garbage, 11.5% in the sink or bathroom	England

Table 1. Studies on Medicine disposal. Source: Adapted from Quadra et al. (2019)

In order to stimulate changes in individuals' behavior, such as the disposal of Expired or Disused Home Use Medicines, it is not possible to present only technical arguments about the losses that stem from inadequate attitudes. According to Frascara (2009), it is necessary to offer important cultural value to the behavior one seeks to promote, that is, a positive cultural value to the people one intends to reach.

2.2 PUBLIC POLICIES FOR MEDICINE WASTE

The National Policy on Solid Waste, through Law 12.305 of 2010, is an important milestone in Brazilian environmental administration, which arose in a context necessary to the regulation of the issue of solid waste in Brazil, both in the environmental and the social and economic aspects. This Law helps regulate serious problems related to management of urban solid waste in Brazil, and it is a piece of legislation that guarantees the protection of natural resources, the health of the ecosystem and improvement of the quality of life of all living beings (RAUBER, 2013).

Its article 30 institutes shared responsibility for the life cycle of products, governing and attributing responsibilities among manufacturers, importers, distributors, retailers, consumers and public service title holders of urban cleaning and management of solid waste. The objectives of shared responsibility are,

> "I – to make compatible the interests of economic and social agents, and the processes of business and market management

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> and those of environmental administration, thus developing sustainable strategies; II – to promote the utilization of solid waste, directing it to its production chain or other production chains; III – to reduce generation of solid waste, waste of materials, pollution and environmental damages; IV – to incentivize the use of raw materials that are less environmentally aggressive and more sustainable; V – to stimulate market development, and the production and consumption of products derived from recycled and recyclable materials; VI – to provide that productive activities achieve efficiency and sustainability; VII – to promote best practices of socio-environmental responsibility". (BRASIL, 2017, p 13).

Art.33 of the 2010 NPSW establishes that it is mandatory to form reverse logistics systems to direct the return of products at the end of their life cycle in post-consumption. The formation of these systems is independent of the system of public services for urban cleaning and management of solid waste, and it involves manufacturers, importers, distributors and retailers of,

> "I – pesticides, their residues and packaging, as well as other products whose packaging, after use, constitutes dangerous waste, in accordance with the rules of management of dangerous waste provided in laws or regulations, in norms established by the organs of Sisnama, SNVS and Suas, or in technical norms; II – batteries; III – tires; IV – lubricants, their residues and packaging; V – fluorescent, sodium and mercury vapor and mixed light lamps; VI – electric and electronic products and their components". (BRASIL, 2017, p.14).

Decree 10.388 regulates § 1 of art. 33 of the National Policy on Solid Waste, Law 12.305 of August 2nd, 2010. This decree institutes the system of reverse logistics of expired or disused home use medicines, for human use, industrialized and compounded, and of their packaging after disposal by consumers, involving manufacturers, importers, distributors, retailers and consumers, as laid out in Decree 7.404 of December 23rd, 2010 (BRASIL, 2020).

3 METHODOLOGICAL PROCEDURES

This study presents part of the developments of a master's dissertation presented in February 2022 whose central theme is the disposal of Expired or Disused Medicines from the perspective of Design and the Circular Economy. The study in question analyzed the actors and sectors of the circular network for the issue of the disposal of expired or disused

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medicines.

The social actors of the research were defined by their relation to the problem of the inadequate disposal of EDHUM. As such, they were chosen for their representation in the production chain of pharmaceutical products, where we can highlight: 1) the multinational medicine industry; 2) the employers' union of the pharmaceutical and chemical sector; 3) the sanitary engineering association; 4) the class council of pharmaceutical professionals, and others. Table 2 presents the interviewed institutions and their intended objectives.

Institution	Chain representative	Objective
Employers' union of pharmaceutical products of Minas Gerais	Employers' union of the industry of chemical and pharmaceutical products of the State of Minas Gerais, responsible for developing studies and coordination, for the benefit of companies in the pharmaceutical, chemical and cosmetic sector.	Understanding the perception of the entity in relation to the challenges of structuring the reverse logistics of expired or disused home use medicines.
Environmental state entity - Minas Gerais	State institution connected to the State Secretariat for the Environment and Sustainable Development, one of whose objectives is to promote the application of environmental administration tools in the State of Minas Gerais. The entity supports other state-level environmental institutions, and integrates national organs connected to the environment. The person interviewed in this institution works with waste.	Understanding the action of state institutions when it comes to the issue of disposal of expired or disused home use medicines.

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Institution	Chain representative	Objective
Entity representative of pharmaceutical professionals of Minas Gerais	The entity develops activities that seek to contribute to the improvement of public health and pharmaceutical assistance, stimulating the development of training programs for professionals in the area.	Understanding the articulations of the entity representative of pharmacies and drugstores in relation to the issue of disposal of expired or disused home use medicines as a result of decree 10.388
Engineering association in the State of São Paulo	Brazilian Association of Sanitary and Environmental Engineering – Chamber of Solid Waste. The entity's purpose is to develop technical-scientific, political-institutional and administrative activities that contribute to the development of environmental sanitation, seeking to improve health, the environment and the quality of life of living beings.	Understanding the mobilizations undertaken by the institution with regard to Reverse Logistics of medicines, knowing that the institution led the creation of ABNT norm 16.457, which orients best practices for Reverse Logistics of expired or disused home use medicines.

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Institution	Chain representative	Objective
Science and consumption institution	Non-profit organization that develops awareness, mobilization and engagement actions for conscious consumption.	Understanding which actions the institute develops along with consumers with regard to the correct disposal of expired or disused home use medicines
Pharmaceutical industry	Multinational company, located in the State of Minas Gerais, in the City of Montes Claros, which manufactures medicines for diabetes, obesity and other serious illnesses.	Understanding how the industry organizes itself to comply with Decree 10.388 and how the area of Design can be a tool to reach these dealings

Table 2. Actors interviewed during research. Source: Fonseca (2022).

The master's research was qualitative, and used field research as a technical procedure. As a complement, the study was coupled with documentary research, given that there was a need to present analyses of legislation and technical norms that permeate the matter. The study used unstructured interviews as its research tool. It focused on this type of interview in order not to limit the possibilities of findings in the field, and because it is a relatively new subject in terms of legislation and structuring of the public policies that deal with it.

The focus of the study has the concept of a circular network proposed by Léa Gejer and Carla Tennenbaum as its investigative basis. In this concept, the authors propose the rationale of a circular network that aids in understanding the actors and sectors that compose this circular network. According to the authors, for each project, it is necessary to consider which stakeholders are relevant and what the necessary rationales to establish are in case one intends to transition to a rationale connected to the precepts of the Circular Economy. Communication was one of the key areas in the issue of disposal of Expired or Disused

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Medicines that was relevant in the interviews from the perspective of the interviewed authors.

4 APPLICATIONS AND/OR RESULTS

In a circular network, communication has an important role in the transition to a circular economic model. This role may be connected to the project for communicating a specific Public Policy, such as the Reverse Logistics of Expired or Disused Medicines, with a focus on education and creating awareness of correct disposal. Table 3 shows the main communication-related demands identified from the documentary study of the research, taken from Brazilian Technical Norm NBR 16.557 (Reverse Logistics of Expired or Disused Medicines) and Decree 10.388 (Reverse Logistics of Expired or Disused Medicines for Brazil), which standardizes these logistics in Brazil.

Analyzed document	Informational demands
ABNT 16.457 (2016)	**Documents and records:** presents the demands for records of movements of medicines discarded by the consumer, in the management stages, ensuring the monitoring of all stages of reverse logistics (ABNT, 2016).
	Consumer guidance: medicine consumers must have guidance pertaining to adequate disposal of medicines, illustrating which medicines should be disposed of and which should not. (ABNT, 2016).

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Analyzed document	Informational demands
Decree 10.388	Article 20 determines the promotion of the system of reverse logistics of expired or disused home use medicines and their packaging to be the responsibility of home use medicine manufacturers, importers, distributors and retailers, who will make information available to consumers through digital media and electronic sites. **What must be informed:** guidance about the system of reverse logistics of expired or disused home use medicine in regard to consumer participation in the adequate return of medicines and their packaging (BRASIL, 2020).

Table 3 – Communication demands. Source: Compiled by the authors (2022)

During field research, two actors in the pharmaceutical production chain pointed out some problems in the realm of communications within the issue of Reverse Logistics of Expired or Disused Home Use Medicines. Table 4 below presents the main issues ascertained.

Interested party	Situation identified
Class council of the pharmacy sector	Perceives communication as the main challenge in relation to raising awareness of associates and consumers;

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Interested party	Situation identified
Sanitary engineering association	Highlights the need for clarity in the process of communicating with the population. To this entity, if there is no clear communication, there is a risk of the consumer not adequately separating the medicines that can be disposed of. Additionally, it points out the occupational risk to professionals responsible for their collection.
	Initial communication only to Brazilian cities with over 100 thousand residents, creating obstacles to national-level communication.

Table 4 – Situations ascertained. Source: Compiled by the authors (2022)

5 DISCUSSIONS

The realm of communication within the circular network presented relevant findings to the study, both in documentary and field research. In accordance with legislation directly related to the issue of disposal of Expired or Disused Home Use Medicines, there are demands to generate documents and records capable of measuring system efficiency as well as guidance that must be given to medicine consumers (ABNT 16.457 (2016)); Decree 10.388 presents demands with regard to what must be informed to consumers so that they are able to fulfill their role.

In the study with interested parties, it was possible to ascertain their perspectives with regard to the issue of EDHUM. To the class entity of the pharmaceutical sector, communication with associates and consumers is the main challenge to the viability of Reverse Logistics of Medicines, provided in Decree 10.388. The perspective of the Sanitary Engineering entity points to the need for clarity in the process of communicating with the population so that correct disposal may happen, thus ensuring the safety of professionals responsible for collection in receiving posts. Another aspect highlighted by this institution is the partiality of communication, that is, due to implementation criteria, only cities with over 100 thousand residents will proceed with implementation of Reverse Logistics of Medicines, creating obstacles to national-level

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communication.

In regard to spreading information through communication, bibliographic research showed that Design has an important role in the issue of disposal of EDHUM connected to a Public Policy, helping to make it so the right information reaches those affected by the problem, being able to direct them to the correct action. According to Bonsiepe (2011), Design favors the reception and interpretation of informational messages, and, as a result, can allow more satisfactory actions by individuals. The central issue is in consolidating all the necessary information that encompasses the issue of EDHUM, in order to build, through Design, a clear and assertive communication plan. Redig (2004) confirms this, by stating that informational Design has a relevant role in making individuals competent with information, and that it is essential to the formation of a citizen. To the author,

> "There is no citizenship without information, nor information without Design. These small examples, added to so many others, bring the notion of citizenship to the scope of designers' responsibility, and particularly information designers'. It falls to us to assume this responsibility, along with public authorities, through academic and professional entities". (REDIG, 2004, p.66).

In this regard, Redig (2004) brings forth two important questions that are relevant to the issue of disposal of EDHUM: that of citizenship and that of the role of design professionals. If citizenship is formed through access to information (REDIG, 2004), one can conclude that, through Design, it is possible to help individuals reach citizenship, correctly fulfilling their rights and duties. In the case of EDHUM disposal, Informational Design can aid Public Policies so that citizens understand their duties in the shared responsibility for the life cycle of products provided in the National Policy on Solid Waste, thus fulfilling their role.

6 FINAL REMARKS

This study warns of the gravity of the environmental problems that the global community faces in modern times or may face in the future resulting from the excessive exploration of non-renewable natural resources, and also from the ingestion of residues generated by production processes or in post-consumption, including expired or disused home use medicines (EDHUM).

From the results of the study, there can be no doubt that problems

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of this magnitude can be considered complex problems, which demand legislation to regulate them, and knowledge and tools to address them. In this regard, Design, through its transversal character and know-how for working with complex problems, can contribute to mitigate this type of problem, particularly informational Design, given that it can aid in the construction of communication projects capable of helping citizens know their duties and obligations through legislation related to Environmental Policy.

Furthermore, informational Design could aid in the handling of campaigns for environmental education and raising population awareness about the scale of the negative impact that the inadequate disposal of these medicines can have on public health and the environment.

Finally, the study sought to instigate the scientific community in this area with regard to the need for further research on this topic, in light of the lack of literature found in the documentary research stage, which indicates a fitting theme for future studies.

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