

# COVID-19 and Chemical Usage in Jamaica



***Sherika  
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## **IPEN: For a Toxics-Free Future**

International Pollutants Elimination Network (IPEN) is a global network forging a healthier world where people and the environment are no longer harmed by the production, use, and disposal of toxic chemicals. Over 600 public interest NGOs in more than 124 countries, largely low- and middle-income nations, comprise IPEN and work to strengthen global and national chemicals and waste policies, contribute to ground-breaking research, and build a global movement for a toxics-free future.

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## **CARPIN: Poison Prevention**

The Caribbean Poison Information Network (CARPIN) is located in the College of Health Sciences, University of Technology, Jamaica. The mission is to prevent poisonings through public education, advocating for policies that will protect the health and welfare of the most vulnerable and at-risk populations from poisonings and working with stakeholders to build regional cooperation in poison prevention and management. <https://www.utech.edu.jm/academics/colleges-faculties/cohs/carpin>

## **About the Author**

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**The content of this report is the sole responsibility of the author.**



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## Acronyms

<b>BSJ</b>	Bureau of Standards Jamaica
<b>CAC</b>	Consumer Affairs Commission
<b>CARPIN</b>	Caribbean Poison Information Network
<b>EPA</b>	Environmental Protection Agency
<b>FDA</b>	Food and Drug Administration
<b>GHS</b>	Globally Harmonized System of Classification and Labelling of Chemicals
<b>IPEN</b>	International Pollutant Elimination Network
<b>JIS</b>	Jamaica Information Service
<b>MICAF</b>	Ministry of Industry, Commerce, Agriculture and Fisheries
<b>MOHW</b>	Ministry of Health and Wellness
<b>NCRA</b>	National Compliance and Regulatory Authority
<b>SAICM</b>	Strategic Approach to International Chemicals Management



## Executive Summary

Jamaica is the largest island in the English-speaking Caribbean and the most populated, with 2,969,340 million people. Jamaica has participated in numerous forums and workshops focusing on chemicals management and response preparedness in acute-related chemical hazards. Forums relevant to the management of chemicals that Jamaica participated in during the pandemic are the SAICM and the Caribbean Sub-Regional Workshop on Preparedness for and Response to Acute Events related to Chemical Hazards.

Chemical management in Jamaica is covered under several acts with a focus on pesticides and precursor chemicals. Other chemicals are unregulated (National Profile for the Management of Chemicals in Jamaica, 2006), and include cleaning chemicals and sanitizing agents that are used daily by the entire population, including adolescents and even children, who are given the task of cleaning at home. The authority responsible for the chemical standards is the Bureau of Standards Jamaica, an agency under the Ministry of Industry, Commerce, Agriculture and Fisheries (MICAF).

The National Compliance and Regulatory Authority has approved 32 hand sanitizers, for which Jamaica and China were dominantly the origin places. However, across two parishes (Kingston & St. Andrew) and Clarendon, there was non-compliance for sanitizer products that did not contain the alcohol threshold of 62 percent, and also absence of labels on containers, so 50,000 products were seized from distributors. These included hand rubs from Jamaica, China, and Mexico (Gleaner, 2020).

Jamaica has a long history of accidental poisoning with household chemicals, specifically bleach, amongst children 0-5 years. Bleach is the leading causative agent of accidental poisoning reported over the past ten years. The Ministry of Health Surveillance report from 2008 to 2015 reflected the confirmed cases for bleach poisoning within the range of 170 – 434, with mainly a gradual increase annually. 80% of the confirmed cases include children aged 0-5 years.

Jamaica received its first case of COVID-19 imported into the country in March 2020. The CARPIN launched an online survey to evaluate chemical usage during the pandemic. Participants were residents of Jamaica who are 18 years and older, who used cleaning chemicals and sanitizers.



There was only one opportunity to submit a completed response per email address. Information gathered from 85 participants showed an increase in cleaning and sanitizing household chemical usage since the COVID-19 emerged on the island. The majority of chemicals used during the period May –September 2020 had labels. Labels gave basic information on the name of the product. However, the adequacy of information on usage provided on each label was not explored.

With the application of sanitizers, daily chemical usage was high- up to seven times or more per day; however, most participants used chemicals up to 1-2 times per day. Participants used more chemicals during the pandemic than before, with only a small percentage of persons using the same chemicals as they had pre-pandemic. It was noticed that persons in a low-risk environments did not feel the need to increase their chemical usage or good practices during the pandemic.

The following recommendations can help in preventing another health crisis within the present crisis. They would also contribute to Jamaica's achieving Sustainable Development Goal 3 to ensure healthy lives, promote well-being for all by 2030, and substantially reduce the number of deaths and illnesses from hazardous chemicals, air, and water contamination.

1. Implement more robust chemical policies and include cleaning and sanitizing chemicals for domestic, industrial, and institutional use. The policies should provide scope for standardizing labels, packaging, and distributing chemicals to consumers, providing all the required information critical to health and safety.
2. Regulate the local retail chemical industry to create standardized packaging, labeling and distribution of cleaning, sanitizing, and disinfecting chemicals. This will prevent the mis-identity of chemicals packaged in food look-alike containers.
3. Ensure that the GHS guides the standards for household chemicals, showing distinctions between commercially and domestically-used household products.
4. Improve the accidental poisoning surveillance system to include data from both public and private care facilities.
5. Establish a national database of chemicals imported and manufactured for risk and emergency assessment.
6. Conduct random sampling for all local and imported chemicals to detect toxic substances or sub-standard ingredients.



## 1.0 Introduction

Each stage in the chemical life cycle makes a significant contribution to economic development in any country. The main concerns are related to the impact on health and the environment during its life cycle. Chemicals produced and traded in Jamaica can be categorized as industrial, agricultural, and consumer/household chemical products (National Profile for the Management of Chemicals in Jamaica, 2006). The consumption of chemicals by all industries and modern society's reliance on chemicals for virtually all manufacturing processes makes chemical production one of the world's leading and most globalized sectors (SAICM, 2021). Since the emergence of the severe acute respiratory syndrome-COVID-19, there has been an urgent need to use chemicals for cleaning and disinfecting as a barrier to lower the risk of COVID-19 transmission. Health professionals globally recommend best practices in hand hygiene: frequent cleaning of hands through washing with soap and water and then applying sanitizers.

Jamaica received its first imported case of COVID-19 in March 2020. The impact of COVID-19 resulted in a drastic change in the use, manufacturing, and sales of cleaning and sanitizing chemicals. Therefore, since the beginning of the pandemic, a notable increase in the use of these chemicals in homes and institutions has been observed. In addition, the pandemic contributed to the overuse and exposure of the general population to such chemicals, which can potentially negatively impact the health of the population in the future through increased respiratory illnesses and dermal conditions.

This report discusses the impact of COVID-19 and the use of cleaning and sanitizing chemicals in Jamaica. The sources of information emanate from the review of data published by manufacturers and suppliers of chemicals on the local market, as well as Government Authority reports on standards and regulations pertinent to compliance with cleaning and sanitizing products. The report also explores the incidence of accidental poisoning, improper usage of chemicals during the pandemic, and the public health significance due to the shift in the use of the mentioned chemicals. The report concludes with recommended approaches to mitigate



## 2.0 Country Profile



Jamaica is the largest island in the English-speaking Caribbean and the most populated, with 2,969,340 million people (Jamaica's Team 2008; Worldometer 2021). The island is divided into three counties – Cornwall, Middlesex, and Surrey – which are subdivided into fourteen parishes: Kingston, St. Andrew, St. Catherine, Clarendon, Manchester, St. Elizabeth, Westmoreland, Hanover, St. James, Trelawny, St. Ann, St. Mary, Portland, and St. Thomas. Each parish has a capital town, typically the center of commerce, and two parish capitals, Montego Bay in St. James and Kingston, have city status. Kingston, located on the island's southeast end, is Jamaica's capital. Like its neighbours, Jamaica is vulnerable to natural disasters - such as hurricanes and flooding - and the effects of climate change. In addition, it is an upper-middle-income economy that is struggling due to low growth, high public debt, and exposure to external shocks (World Bank 2021).



## 2.1 Pandemic Profile

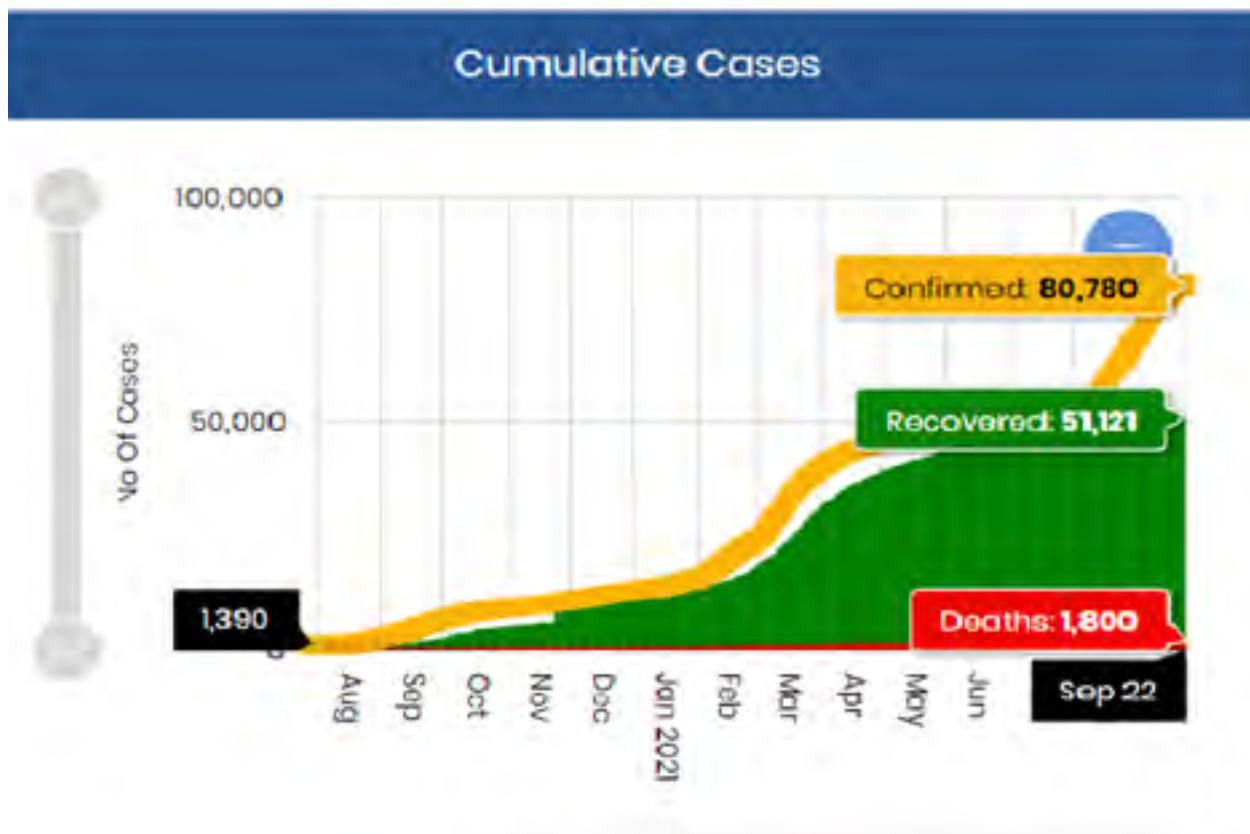
Jamaica confirmed its first imported COVID-19 case on March 10, 2020 (JIS, 2020). As of February 25, 2021, Jamaica continues to have an increasing spike in transmitting the communicable disease COVID-19. As of the time of the finalization of this report, there have been a total of 80,780 confirmed cases, with 51,121 recovered and 1,800 fatalities, as shown in figure 2 below. Figures 3 and 4 show the age groups that are most affected. People aged 20 – 69 years have a high recovery rate, whilst the majority of deaths are accounted for in the 70-79 age group. In terms of sex, females were most active and had a higher recovery rate and lesser deaths than males.

### Endemicity

A constant rate of COVID-19 infection is experienced as the country enters the community-spread, with open borders to continue trade and travel in and out of the country. Cases have now been transmitted island-wide, with a high caseload per population, as shown in figures 2-4. The roll-out of a vaccination programme and intermittent lockdown are the strategies implemented to control high hospitalization, which has been a heavy burden to the health system.



**Figure 2: COVID-19 Case- Profiles**



(Ministry of Health and Wellness 2021 B)

**Figure 3: COVID-19 Confirmed, Recovered and Deaths Amongst Age Groups**



(Ministry of Health and Wellness 2021 B)





**Figure 4: COVID-19 Cases Between Male and Female**



(Ministry of Health and Wellness 2021 B)

## 2.2 Regulating Authority for the Management of Chemicals

Chemical management in Jamaica is covered under several acts, with a focus on pesticides and precursor chemicals. In contrast, other chemicals are unregulated (National Profile for the Management of Chemicals in Jamaica, 2006), and include cleaning and sanitizing chemicals used daily by most of the population, including adolescents and younger children who are sometimes younger given the task of cleaning at home. The authority responsible for the chemical standards is the Bureau of Standards Jamaica, an agency under the Ministry of Industry, Commerce, Agriculture and Fisheries (MICAFA), and it is governed by a fourteen-member Standards Council.





The Bureau of Standards Jamaica is a statutory body established by the Standards Act of 1969 to promote and encourage standardization concerning commodities, processes, and practices. Its principal activities include facilitating the development of standards and other requirements to which particular commodities, services, practices, and processes must comply. The BSJ also monitors compliance, conducts tests and calibrates instruments, certifies products and management systems, provides industrial training, and promotes research and education in standardization (BSJ, 2021).

The National Compliance and Regulatory Authority (NCRA) is a statutory body that falls under the Ministry of Industry, Commerce, Agriculture and Fisheries (MICAF). The NCRA is responsible for registering pre-packaged food establishments, registering importers and local manufacturers of goods for which compulsory standards exist, and inspecting goods at the ports of entry and in the domestic market, as well as undertaking responsibility for the verification of weighing and measuring devices used in trade and conduction petrol sampling. Compliance activities and the execution of enforcement actions are within the remit of the NCRA. They “partner with businesses to achieve conformance with established standards and regulations,” and their work “provides proof and added assurance of safety and quality to consumers” (NCRA, 2021).

The Consumer Affairs Commission (CAC) is a government agency under the Ministry of Industry, Investment and Commerce, whose role is to enforce the Consumer Protection Act 2005 (Amended 2012) and a range of additional legislation, promoting competition and fair trading for the benefit of all Jamaicans. There is close collaboration between Jamaica Customs, the National Ozone Unit, Trade Board, and the Ministry of National Security on strategies to manage the chemical life cycle's import stage and facilitate trade. Although the importation of some chemicals such as precursors and pesticides is regulated, the export and transit controls of chemicals are limited or non-existent (National Profile for the Management of Chemicals in Jamaica, 2006).

Chemicals are imported mainly from the USA, while Europe, the United Kingdom, and the Far East have suppliers to local distributors. The Standards and Regulation Division in the Ministry of Health monitors and controls chemicals' importation through a permit system. (Amidst having a permit system, to my knowledge, there is no national database or emergency assessment system, which will be critical for the practical implementation of a response program for chemical emergencies).



The Jamaica Customs Department acts as an agent by facilitating the entry of the chemical products approved on the permit (National Profile for the Management of Chemicals in Jamaica, 2006).

## **2.3 Policy Framework for Chemicals in Jamaica**

### **Forums for Chemical Management**

Jamaica has participated in numerous forums and workshops focused on chemicals management and preparedness to respond to acute-related chemical hazards. Information from these forums creates the opportunity to evaluate the present frameworks to improve the current policies on chemical management. Forums relevant to the management of chemicals used in the pandemic are the SAICM and the Caribbean Sub-Regional Workshop on Preparedness for and Response to Acute Events related to Chemical Hazards, hosted and facilitated by Pan American Health Organization/World Health Organization and Public Health England, United Kingdom (November 2017). After participating in numerous forums and workshops, one step not taken in Jamaica is creating a chemicals in products database that can help track information relevant to toxicological assessments. An effective chemical management system can only be realized with adequate information guiding the process.

### **Strategic Approach to International Chemicals Management (SAICM)**

The Strategic Approach to International Chemicals Management is a policy framework to promote chemical safety around the world. This approach was adopted at the First International Conference on Chemicals Management (ICCM1) in Dubai on February 6, 2006. The overall objective is to achieve the sound management of chemicals throughout their life cycle so that chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health (SAICM 2021). This approach is geared towards sustainable consumption and production of chemicals and cooperation across actors and sectors throughout the supply chain, from producers to final consumers.

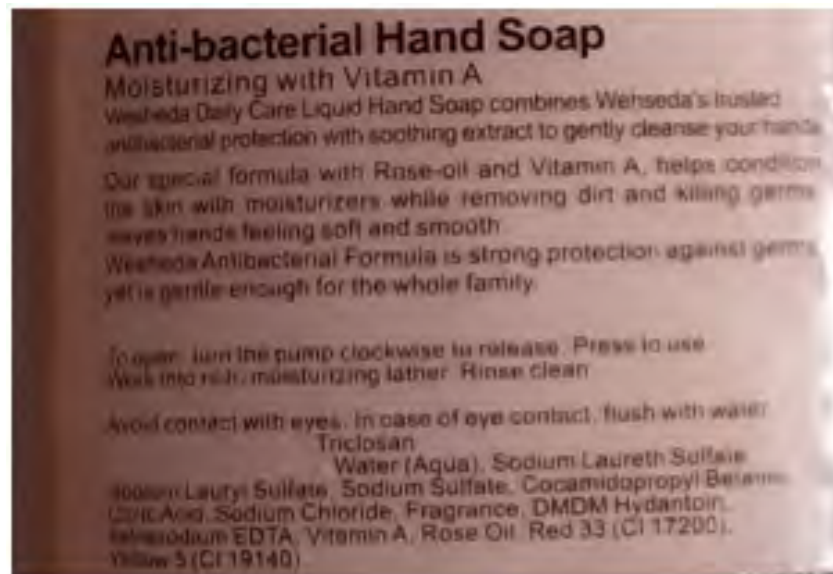


Jamaica is a member of the global community of chemicals management and has been an integral part of this discussion through the government sector (Ministry of Water, Land, Environment and Climate Change) since 2015, and NGOs such as the CARPIN since 2019. For the present and post-pandemic, special attention should be paid to the production and distribution of cleaning and sanitizing chemicals amongst and within countries to ensure for safe management and usage. Therefore it is imperative to monitor the chemical market both locally and regionally for the presence of toxic ingredients such as methanol (refer to Box 1) and triclosan that are added to some sanitizers and hand-wash soaps. The Ministries of Health and Environment should demand that the chemical industry be transparent in displaying all active ingredients added to chemicals for cleaning and sanitizing, especially during the pandemic period. The present SAICM discussion should now focus on these toxic chemicals of concern to health and the environment as a precautionary step into the long-term impact overexposure can have on population health post-pandemic. Figures 4 & 5 are labels of a sanitizer that is manufactured locally and a hand soap that is imported and distributed locally, both containing triclosan.

**Figure 5: Triclosan as an Ingredient in Local Hand Sanitizer**



## Figure 6: Triclosan as an Ingredient in Local Hand-wash Soap



### Caribbean Sub-Regional Workshop on Preparedness for and Response to Acute Events related to Chemical Hazards

In 2013, 2017, and 2019, the Ministry of Health and Wellness (formerly the Ministry of Health), the Office of Disaster Preparedness and Emergency Management, Jamaica's Fire Brigade, and the CARPIN participated in workshops to review the public risk assessment and multi-stakeholder collaboration to be able to respond to chemical events through the implementation of a National Chemical Emergency Risk Management Plan. The response plan complements the International Health Regulation (IHR), for which countries are required to strengthen and expand their capacities related to preparedness and response to chemical events to lower the potential public health impact in the event of an occurrence (Report from the Caribbean Sub-Regional Workshop on Preparedness for and Response to Acute Events related to Chemical Hazards, Port of Spain, Trinidad and Tobago, and October 30- November 1 2017). Chemical events for notification under IHR 2005 include those arising from products like poisoning through exposure from products, such as the methanol intoxication in 2011 in Ecuador (WHO, 2015). These workshops have given countries in the region technical knowledge about managing events that can occur from chemical incidents, which are possible during a pandemic. However, more training is needed locally and in the region to create a platform for Poison Centres and Health



Ministries to create a strong collaborative approach and to have robust chemical surveillance programmes with funding support from governments.

## Globally Harmonized System

Jamaica participated in the Regional Globally Harmonized System (GHS) to label chemical containers, a Caribbean workshop in 2013 and 2014. These were introductory workshops on industrial chemicals under the Rotterdam Convention for the Caribbean held in Port of Spain, Trinidad & Tobago. The Globally Harmonized System of Classification and Labelling of Chemicals is especially pivotal in ensuring that all cleaning, sanitizing and household chemicals comply to a standardize system which can help to alleviate accidental poisoning during the pandemic by providing accurate information labels, especially for active ingredients.

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) addresses the classification of chemicals by types of hazard and proposes harmonized hazard communication elements, including labels and safety data sheets. It aims to ensure that information on physical hazards and toxicity from chemicals is available to enhance human health and the environment during the handling, transport, and use of these chemicals. The GHS also provides a basis for harmonizing rules and regulations on chemicals at national, regional, and worldwide levels, an essential factor for trade facilitation (UNECE, 2021). Implementation of the GHS has been identified as one of the 11 essential elements recognized as critical at the national and regional levels to attain sound chemicals and waste management. In paragraph 23 (c) of the Plan of Implementation of the World Summit on Sustainable Development (Johannesburg, South Africa, 2002), countries were encouraged to implement the GHS as soon as possible and to have the system fully operational by 2008 (UNECE, 2021).

The current chemical environment in Jamaica is very troubling due to the absence of policies to regulate cleaning, sanitizing, and disinfectant chemicals within households and institutions. As a result, the local market is flooded with unlabelled or inadequately labelled chemicals, and/or improper packaging of chemicals, which is one of the main contributors to accidental poisoning. Implementing the GHS will reap valuable information for toxicological profiles of chemicals, evaluation, and risk assessment to determine the health and environmental impact.



## 2.4 Chemical Manufacturers in Jamaica

Chemical manufacturers in Jamaica consist of six large importers/distributors, which serve both the industrial and domestic markets (National Profile for the Management of Chemicals in Jamaica, 2006). Regarding sanitizers on the local market, the Bureau of Standards Jamaica reported 62 brands, with hand sanitizer from commonwealth countries, Latin America and Asia that are compliant (see detailed countries in Annex II).

## 2.5 Chemical Industry Compliance

The urgent demand for copious cleaning and sanitizing products to mitigate the transmission of the COVID-19 virus has required regulation of the chemical industry so that they adhere to safety standards and protocols in producing cleaning and sanitizing agents for consumers' use. The Bureau of Standards Jamaica conducted numerous tests on hand sanitizer products on the market. The results showed several products that have not met the minimum 60% alcohol content requirement for preventing transmission of COVID-19. Additionally, the National Compliance and Regulatory Authority pulled hand sanitizers from the market in their market surveillance activities due to a high degree of non-conformity with labelling regulations (BSJ, 2021). Apart from non-compliance to the stipulated standards and labelling, there has been a steep increase in chemical cost, simultaneously with consumers' consumption.

The National Compliance and Regulatory Authority has approved 32 hand sanitizers, for which Jamaica and China were dominantly the origin places. However, across two parishes (Kingston & St. Andrew) and Clarendon, there was non-compliance for sanitizer products that did not contain the alcohol threshold of 62 percent, and also absence of labels on containers. 50,000 products were therefore seized from distributors; including hand rubs from Jamaica, China, and Mexico (Gleaner, 2020).

The onrush of sub-standard products on the local markets during the pandemic have the potential to cause harm to the population either through non-effectiveness as a barrier to the transmission of COVID-19 or being toxic (should the active ingredient not be recommended for





dermal application). Additionally, random testing for imported hand-washing soap, sanitizers, and disinfectants is needed to prevent the release of toxic products on the local market. For example, in Box 1, Mexico and China, which are also suppliers to Jamaica, were red flagged for toxic ingredients in sanitizer products by the U.S. FDA; a similar strategy can be used in Jamaica.

The Bureau of Standards Jamaica has provided the Standard Act JS 1: Part 15: 1992 on Labelling Household Chemicals, which is only accessible through purchase. There should instead be free access, allowing all with interest in the Standard to access it, as it is a guidance document for industry and other relevant stakeholders who would readily need this type of information.

**BOX 1: USA Red Flagged Sanitizers from Mexico and China**

- a) Guangzhou Youxing Cosmetics Co. Ltd.'s (China) "V&W Advance Hand Sanitizer Refreshing Gels" (multiple) - FDA-tested product whose ethanol alcohol level was found to be subpotent; also products produced in facility manufacturing subpotent ethanol alcohol products; and "V&W Moisturizing Refreshing Spray Sanitizer [isopropyl alc.]" (multiple), "V&W Premium Disinfecting Wipes," "V&W Advance Hand Sanitizer Refreshing Gel" and "V&W Moisturizing Refreshing Spray Sanitizer [isopropyl alc.]" - products produced in facility manufacturing subpotent ethanol alcohol products.
- b) Inovaker Lab SA de CV's (Mexico) "Hand+ Sanitizer Ethyl Alcohol Antiseptic 75% Topical Solution" - FDA-tested product whose ethanol alcohol level was found to be subpotent; and "El Bueno Hand Sanitizer," "Hand Sanitizer Isopropyl Alcohol Antiseptic 75%," "Hand Sanitizer Ethyl Alcohol Antiseptic 75%," "EMHS1 Alcohol Hand Sanitizer," "EMHS1 Advanced Isopropyl Alcohol Hand Sanitizer" and "Inovaker Hand Sanitizer" - all reportedly made at a facility producing subpotent ethanol alcohol products.
- c) Rodriguez Fierro, Marco Antonio's (Mexico) "Natural Gold Gel Alcohol Antiseptic 75% Topical Solution" - tested by FDA and ethanol alcohol levels found to be subpotent.
- d) Corporativo Bureli SA de CV's (Mexico) "Soho Fresh Hand Sanitizer Gel Antibacterial" - FDA-tested product found to contain methanol; and "SOHO Fresh Hand Sanitizer Gel Antibacterial" - made at a facility that produced a methanol-containing product.
- e) C&G Laboratorios SA de CV's (Mexico) "Hand Sanitizer Disinfectant Gel" - FDA-tested product found to contain methanol.

(Gabenhofer,2020)

<https://www.cosmeticsandtoiletries.com/regulatory/region/northamerica/Chinese-Hand-Sanitizers-Make-FDAs-Growing-Hot-List-572793241.html>



### 3.0 Accidental Poisoning from Household Chemicals

Since the emergence of COVID-19, Poison Centres worldwide have seen a drastic increase in poisoning reports via household chemicals. Canadian and USA Poison Centers showed a spike in the number of poison calls from exposure to hand sanitizers, disinfectants, and bleach between March –June 2020 and January – March 2020, respectively (Chen, 2020). CARPIN also has seen an increase in calls for accidental exposure from household cleaning products in the 2020-2021 period since the onset of the pandemic.

Jamaica has a long history of accidental poisoning from household chemicals, with bleach being the primary causative agent amongst cases for children 0-5 years for the past ten years. Reports from the Ministry of Health Surveillance Unit from 2008 to 2015 reflected confirmed cases for bleach poisoning within the range of 170 – 434, with a gradual increase annually. 80% of the confirmed cases are children aged 0-5 years. Recent data for accidental poisoning from 2016-2021 has shown few cases, which could be attributed to underreporting of the actual numbers, especially for that of the Bustamante Children's Hospital (the only children's hospital within the country), which receives approximately 200 cases of children poisoned by household chemicals yearly (Gleaner 2018). Notably, accidental poison cases continue to rise amidst a drop in reported numbers from the MOHW Surveillance Unit. It is important to note that cases accounted for are only those recorded through the public system; there is no data from private health care providers. At the same time, there is an expected increase during the pandemic because of the requirement for the application of more cleaning and sanitizing chemicals (of which bleach is one of the main agents used locally) since the onset of COVID-19.

**Table 1: Yearly Distribution of Accidental Poisoning**

Causative Agent	2008	2009	2010	2011	2012	2013	2014	2015
Bleach	178	199	208	224	179	120	187	434

*Source: Ministry of Health Surveillance Report 2008-2015*





Calls received through CARPIN's toll-free emergency line are few, with mostly queries on the use of chemicals and the long-term effect of exposure on victims. Contact to CARPIN is most of the time done hours into days after exposure. However, there has been an increase in the number of calls for exposure to cleaning products for the 2020-2021 period in comparison to same period for 2019-2020. The type of calls during the pandemic range from exposure through inhalation, accidental ingestion of cleaning chemicals, confirmation of the type of chemicals to use for cleaning, and reaction from chemicals used for sanitizing through visitation to public areas.

Anecdotal evidence of reaction from sanitizing chemicals from public places was manifested by a male victim who, after being sprayed with multiple sanitizers from numerous visits to different public facilities, experienced harmful effects to his hands. He saw deterioration in changes to his skin and muscles over a period, stiffness and pain in the joints, rashes on the hand, discoloration to the front and back of his palm, and the inability to use his hand; this resulted in numerous visits to the doctor for treatment, and several such milder cases demanded medical attention (Gleaner, 2020).

### **3.1 Chemical Usage Pattern during Pandemic**

#### **CARPIN's Online Survey**

After Jamaica received its first case of COVID-19 in March 2020, the CARPIN launched an online survey from May - September 2020 to understand persons' knowledge and practices when using cleaning and sanitizing chemicals during the pandemic. The survey was opened to interested participants 18 years and above who used cleaning chemicals and sanitizers. There was only one opportunity to submit a completed response per email address. Participants were residents of Jamaica and reside within any of the fourteen parishes. The survey attracted 85 participants aged 18- <60 years with a diverse educational background spanning from completion of secondary to tertiary education.



Survey questions were open and closed.

Knowledge questions were based on:

- The usage of chemicals when sanitizing
- Improper use of cleaning and sanitizing chemicals causing harmful effect
- The presence of labels on chemicals
- Reading of labels on chemicals
- The possibility of accidental poisoning through improper use of chemicals
- Health effect from using chemicals

Practice questions focused on:

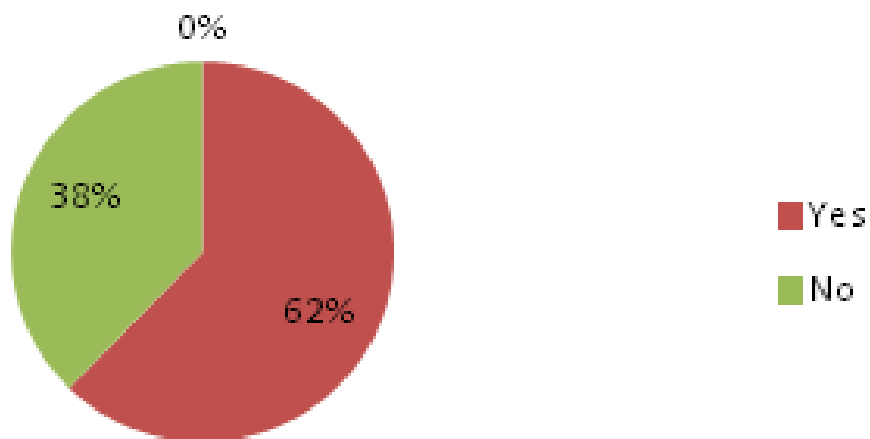
- Chemicals used to clean home
- Chemicals used to clean and sanitize hands
- Type of sanitizers used on hands
- Frequency of use of sanitizer on hands
- Usage of chemical in a proper way
- Types of exposure to chemicals when used

The data was collated and analyzed using Microsoft Excel. The analysis showed increased usage of cleaning and sanitizing chemicals since the COVID-19 emerged on the island. Detailed analysis with narrative and figures are presented below.

Participants reported that the majority (refer to Figure 3) of chemicals they used during the period May – September 2020 had labels that gave basic information on the product's name. However, the adequacy of information on each label was not explored.



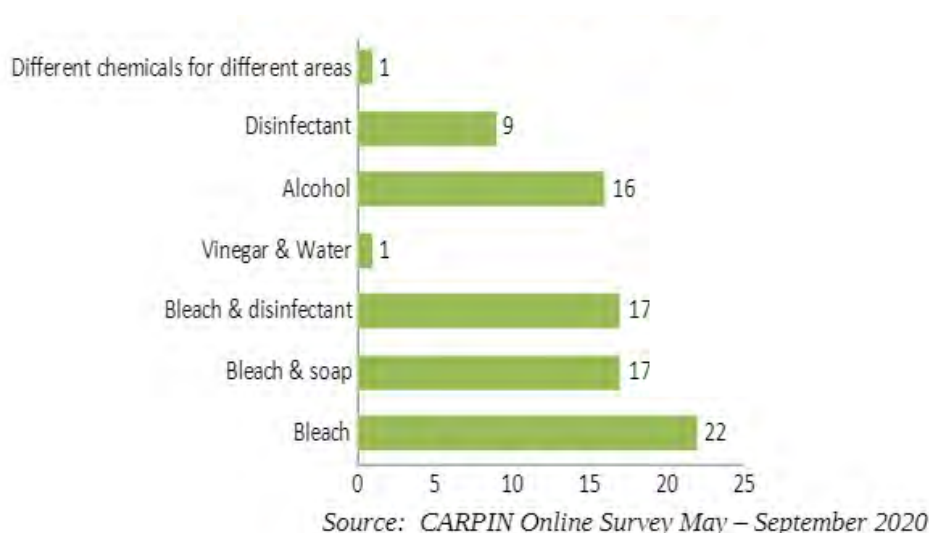
### Figure 7: Availability of Labels on Chemicals



Source: CARPIN Online Survey May – September 2020

The chemical primarily used for cleaning at home was bleach. Although information on the free chlorine content for bleach used was not explored, neither was the application method for the process.

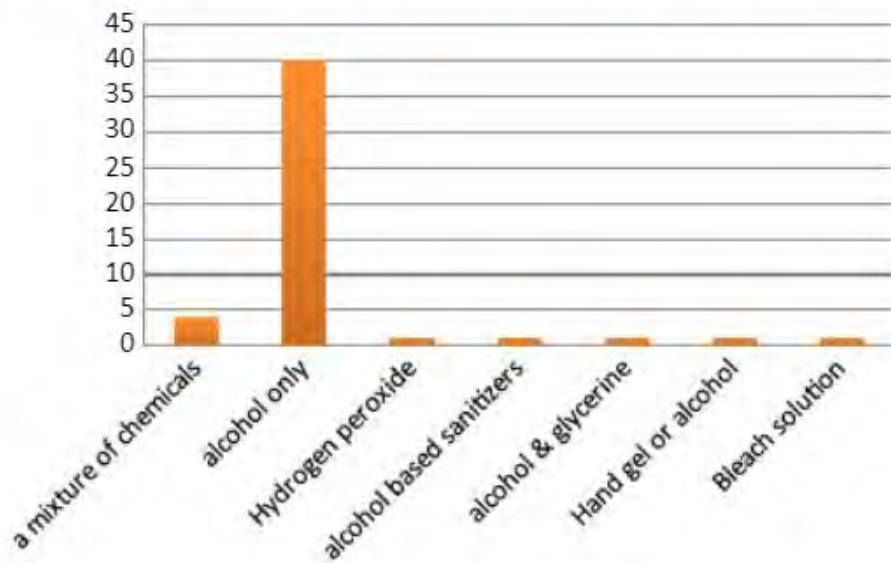
### Figure 8: Chemicals Used at Home



Alcohol was the sanitizer used mainly on the hands, followed by a mixture of different agents, as shown in Figure 5.



**Figure 9: Types of Chemicals used To Sanitize Hands**

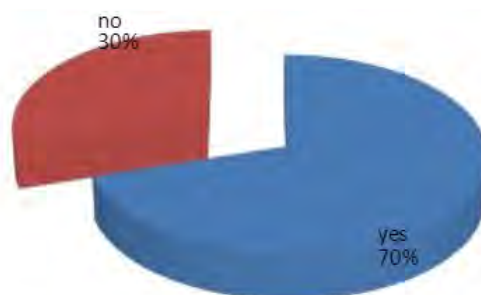


Source: CARPIN Online Survey May – September 2020

A majority (70%) of participants inhaled or breathed in chemicals while using them. There could be toxic effects from mixing the chemicals shown in Figure 5, such as the production of acid, ammonia gas and other toxic fumes, which can be very harmful to respiratory health, especially in an under-ventilated environment.

Additionally, there were associated reactions from this type of exposure, as shown in Figure 13 below.

**Figure 10: Accidentally Inhaled or Breathed in Chemical**

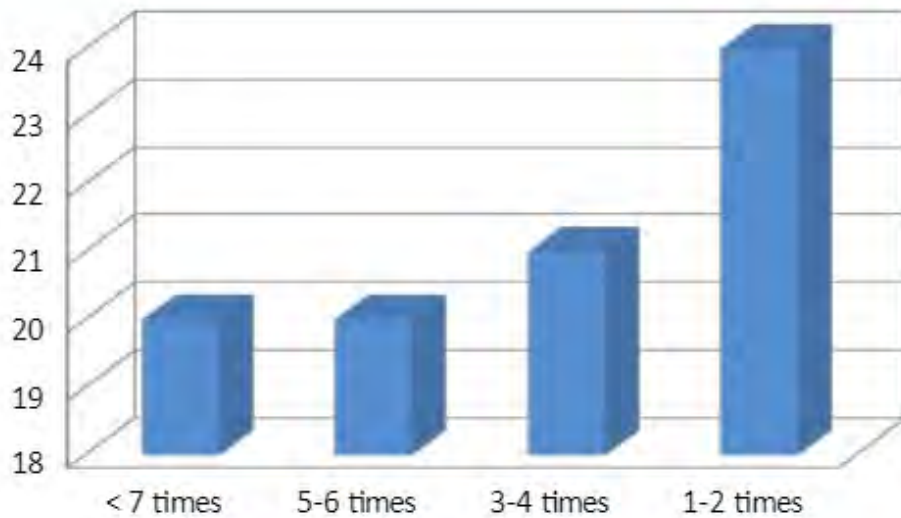


Source: CARPIN Online Survey May – September 2020



Daily chemical usage was high - up to seven times or more per day; however, most participants used chemicals up to 1-2 times per day.

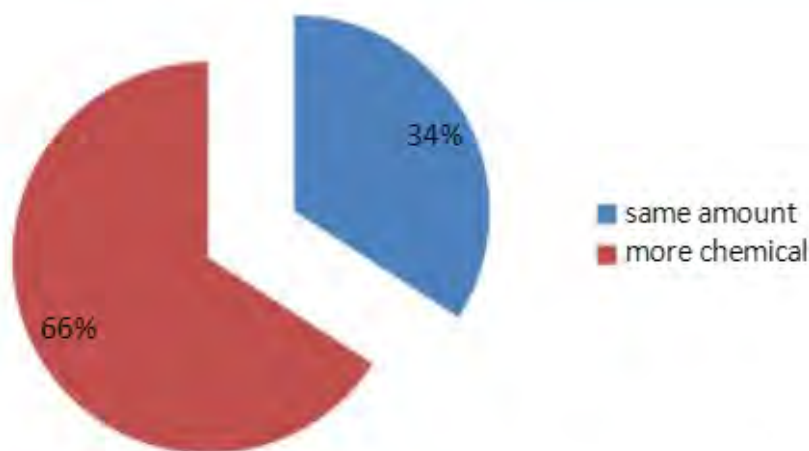
**Figure 11: Frequency of Chemical Usage Daily**



*Source: CARPIN Online Survey May – September 2020*

Participants used more chemicals during the pandemic than before, with only a tiny percentage of persons using the same chemicals as in the pre-pandemic period. It was noticed that persons in low-risk working environments did not feel the need to increase their chemical usage or shift in practice during the pandemic (refer to Figure 12)

**Figure 12: Usage of Chemical Before and During the Pandemic**

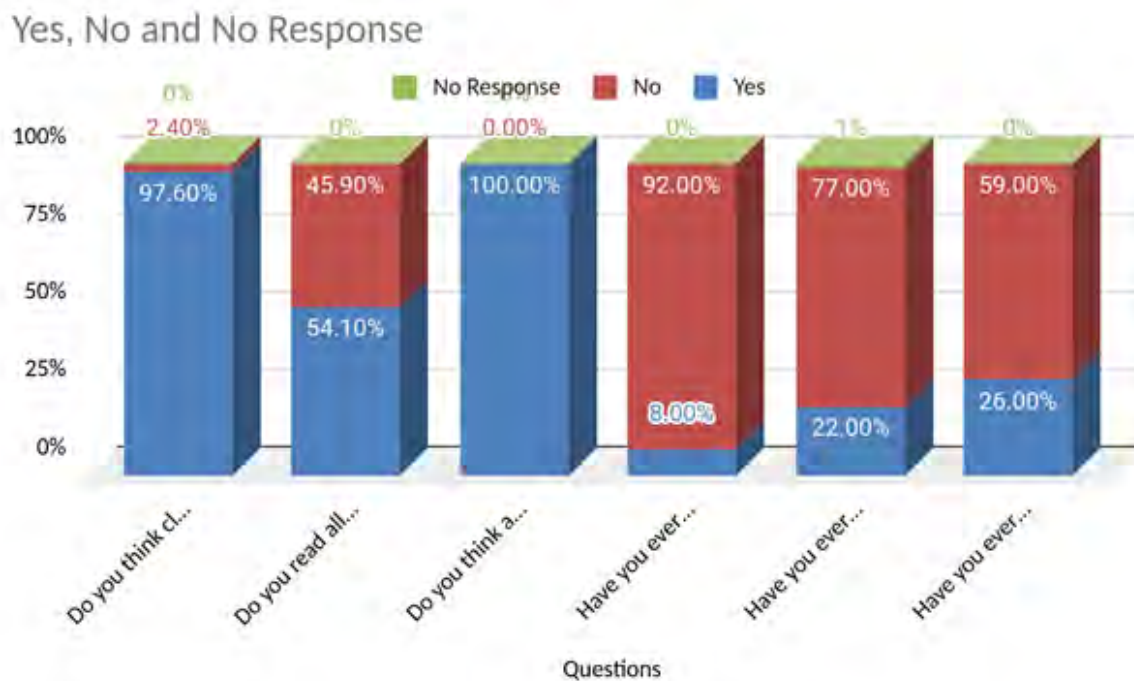


*Source: CARPIN Online Survey May – September 2020*





**Figure 14: Perception and Attitude Towards Cleaning and Sanitizing Chemicals**



Source: CARPIN Online Survey May – September 2020

### 3.2 Chemical Usage Impact on Health

Since the pandemic, the constant use of cleaning, sanitizing, and disinfecting agents is cause for concern within different scientific communities. The long and short-term impacts on health should be considered to guide populations on best practices to limit toxic exposures to the body. The issue of toxic sanitizer that harms health was revealed in a U.S. FDA sample analysis where 84% of sanitizers from Mexico that were analyzed from April to December 2020 contained methanol (Mendez, 2021). Since Mexico, the USA, China and Canada are suppliers to Jamaica, sampling testing should also be done locally to verify the safety of imported products.

Even though hand-washing plays a major role in hand hygiene, it is observed that there is more emphasis on the use of hand sanitizers without the inclusion of hand washing from the health authorities and media houses both local and overseas. The U.S. EPA distinctly defines the





action of a sanitizer, and a disinfectant, where one is intended to kill viruses (disinfectant) and the other does not (sanitizer) (Environmental Protection Agency, 2021). Knowing the purpose of cleaning and sanitizing chemicals is critical in containing abuse, hence limiting negative health impacts

In Jamaica, educational institutions from Early Childhood to Secondary Schools are equipped with multiple hand wash stations on their compounds; however, this is not the same for other institutions. Instead of a hand wash station, organizations have mounted and have designated persons to apply hand sanitizers at the entrance of their facility. This practice does not promote hand hygiene through hand-washing but the consistent use of the chemical application to the hands.

The CARPIN survey has shown similar practices for chemical cleaning and sanitizing agents as with that of other countries such as the USA and Iraq, with the only difference being fatal poisoning from chemical ingestion in Iran.

A May 2020 survey in the USA revealed the following practices for disinfectant usage during the pandemic: using sodium hypochlorite on food items or hands or skin, misting their bodies with a disinfectant spray, inhalation of disinfectant vapors, and drinking or gargling diluted disinfectant solution (Chen, 2020). Similar practices are seen in Jamaica, where individuals spray bed linens and clothes with disinfectants before contact with the body.

Since the outbreak of COVID-19 in Iran, there has been relaxed legislation on alcohol use to include the broader use of alcohol-based hand sanitizers (Shokoohi, 2020). This has given Iranians the opportunity to have access to alcohol as it becomes more available for use as sanitization for COVID-19. However, due to the fear and myths on the use of alcohol for consumption and gargling to prevent transmission of the virus, numerous Iranians are more likely to consume bootleg alcohol, including a higher level of methanol. This resulted in a steep increase in poisoning cases, 3100 of February 2020 – April 2020. There were 728 deaths out of the total number of methanol poisoning cases within the period. Jamaicans also believe in the consumption of alcohol (rum) as a means of mitigating COVID-19 infection.





Over time, exposure to disinfectants has been shown to have acute and chronic health impacts due to misuse, overuse of certain chemicals, single or a combination of the same (Chen, 2020). Overuse of disinfectants includes the excessive use of disinfectants over the recommended frequency, while misuse of disinfectants includes the improper preparation of the disinfectant solution and the improper mixing of sodium chlorite with other products containing ammonia or acids. Users may be exposed to excessive disinfectants or dangerous by-products due to chemical reactions caused by improper mixing of products (Chen, 2020).

Health risk associated with the three most common disinfectant classes (sodium hypochlorite, quaternary ammonium compounds, and peroxides) found that sodium hypochlorite and quaternary ammonium compounds are associated with adverse respiratory health impacts. Hydrogen peroxide appears to have low risks at concentrations used in disinfectant products and has not been associated with asthma or nasal irritation (Chen, 2020). The need to monitor the use of soaps with triclosan is important during the pandemic; since 2018 it's been restricted from use in healthcare by the U.S. FDA because of its potential harm to health. Also, some infection control professionals have advised against its use because of the lack of evidence for clinical effectiveness (Healthcare Without Harm, 2021).

## 4.0 Conclusion

The chemical usage during COVID-19 is a significant concern, with increasing poisoning cases from toxic exposures either from misuse, overuse, or mistaken identity of these chemicals, or contamination from toxic chemicals as was the case for poisoning in Iran. In trying to stem the impact of COVID-19 across the globe, a disaster within a disaster needs close watch and monitoring. The consumption of chemicals has skyrocketed, with weak or absent policies within many countries, including Jamaica. The need for actions in controlling and standardizing cleaning and sanitizing agents should be acted upon urgently. Inaction can negatively impact the health sector, which is grappling to cope with the present pandemic.



## 5.0 Recommendations

The following recommendations can help in preventing another health crisis within the present crisis. It also contributes to Jamaica's achieving Sustainable Development Goal 3 to ensure healthy lives, promote well-being for all by 2030, and substantially reduce the number of deaths and illnesses from hazardous chemicals, air, and water contamination.

- Implement more robust chemical policies and include cleaning and sanitizing chemicals for domestic, industrial, and institutional use. The policies should provide scope for standardizing labels, packaging, and distributing chemicals to consumers, providing all the required information critical to health and safety.
- Regulate the local retail chemical industry to create standardized packaging, labelling, and distribution of cleaning, sanitizing, and disinfecting chemicals. This will prevent the mis-identity of chemicals packaged in food look-alike containers.
- Ensure that the GHS guides the standards for household chemicals, showing distinctions between commercial and domestic used household products.
- Improve the accidental poisoning surveillance system to include data from both public and private care facilities.
- Establish a national database of chemicals imported and manufactured for risk and emergency assessment.
- Conduct random sampling for all local and imported chemicals to detect toxic substances or sub-standard ingredients.



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## Annex I: Government Ministries with Responsibility for Chemical Management

Name of Ministry	Responsibility
Ministry of Finance Jamaica Customs Department	To regulate the import and export of substances and ensure that restrictions are on import/export contained within other legislation is enforced.
Ministry of Health and Wellness Pesticides Control Authority  Maritime Authority of Jamaica	Regulate the use of pesticides and issue import permit for pesticides  To regulate the labeling, packaging and stowage of dangerous goods onboard ships.
Ministry of Industry Commerce and Technology The Trade Board Limited	To control the import and export of certain chemicals

*Source: National Profile for the Management of Chemicals in Jamaica, 2006*



## Annex II: List of Compliant Hand Sanitizers

<b>Brand</b>	<b>Country</b>
<b>Natural Concepts</b>	Canada
<b>Advanced</b>	China
<b>Cleace</b>	China
<b>Clean Hands</b>	China
<b>Dijima</b>	China
<b>JK Victoria-Aloe</b>	China
<b>JK Victoria-Lavender</b>	China
<b>Leas</b>	China
<b>Lifebuoy</b>	China
<b>Lovali-Pure Clean Aloe Vera</b>	China
<b>Lovali-Pure Clean Aloe Vera Gel</b>	China
<b>Lovali-Pure Clean Lemon</b>	China
<b>Lovali-Pure Clean Lemon Gel</b>	China
<b>Marvel Avengers</b>	China
<b>Moon-Moon</b>	China
<b>Tropical Bliss Gel- Aloe</b>	China
<b>Tropical Bliss Gel-Jasmine</b>	China
<b>Tropical Bliss Gel-Original</b>	China
<b>USHAS</b>	China





<b>Wish</b>	China
<b>Dr. Clenze</b>	India
<b>Benjamin's</b>	Jamaica
<b>BIO-SAN</b>	Jamaica
<b>Blue Mountain Aromatics</b>	Jamaica
<b>Brisk</b>	Jamaica
<b>Bunny's</b>	Jamaica
<b>C&amp;S Services and Supply</b>	Jamaica
<b>Caribbean Flavours &amp; Fragrance</b>	Jamaica
<b>Clean Touch Gel</b>	Jamaica
<b>E-ZE-DUZ-IT</b>	Jamaica
<b>Ettenio</b>	Jamaica
<b>Fimi Naturals</b>	Jamaica
<b>Fixsol</b>	Jamaica
<b>Glan</b>	Jamaica
<b>Honey Vera</b>	Jamaica
<b>Island skin Line</b>	Jamaica
<b>J3R</b>	Jamaica
<b>KEM</b>	Jamaica
<b>Mac's</b>	Jamaica
<b>Masler Kleen</b>	Jamaica
<b>Minott Chemicals</b>	Jamaica
<b>Nurses Choice Lemony</b>	
<b>Delight</b>	Jamaica
<b>Ochi soaps</b>	Jamaica



<b>One for All</b>	Jamaica
<b>Paramount Jamaica</b>	Jamaica
<b>Plen</b>	Jamaica
<b>SANICARE Premiun</b>	Jamaica
<b>Sav-lation</b>	Jamaica
<b>Self-Care</b>	Jamaica
<b>Smart, Lemon Scent</b>	Jamaica
<b>Spring Essence</b>	Jamaica
<b>Star</b>	Jamaica
<b>Sun Anti-bacterial</b>	Jamaica
<b>Uelen</b>	Jamaica
<b>Ultra Care</b>	Jamaica
<b>Ultra Care-aloe Vera &amp; Vitamin E</b>	Jamaica
<b>Versa</b>	Jamaica
<b>WOW</b>	Jamaica
<b>Emel</b>	Mexico
<b>Softcare Des E</b>	Mexico
<b>Body Philosophy-Advanced</b>	UK
<b>Body Philosophy-Top Care</b>	UK
<b>Hedonism II</b>	USA
<b>Clean X Gel</b>	USA
<b>Ecolab-(Gel &amp; Liquid)</b>	USA
<b>Purell</b>	USA
<b>Stermon</b>	USA
<b>Total</b>	<b>67</b>

<http://www.ncra.org.jm/articles/list-compliant-hand-sanitizers-29-january-2021>

*Complaint: Alcohol Content (Ethanol (v/v) 60%-80% Isopropanol (v/v) > 70%-80% for Non-healthcare use*

Source: Bureau of Standard As at January 29 2021

