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ENHANCING PRODUCT RECALL EFFECTIVENESS GLOBALLY

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Foreword

This report aims to explore the challenges faced by product safety authorities, businesses, and other stakeholders in measuring and maximising the impact of product recalls globally. It collates and synthesises recall trends involving non-food products, examines and compares government and other stakeholders' understanding of recall effectiveness, and reviews tools and co-operation initiatives in place at domestic, regional and global levels. The report also identifies elements that may be considered by governments and businesses to shape more effective communication strategies and increase consumer awareness of recall response rates.

The report was prepared by Brigitte Acoca, with assistance from Chandni Gupta, of the OECD Secretariat. The Working Party on Consumer Product Safety approved its submission to the Committee on Consumer Policy on 18 October 2018, which agreed to its declassification by a written process on 9 November 2018. It was prepared for publication by the OECD Secretariat.

Note to Delegations:

This document is also available on O.N.E. under the reference code:

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Executive summary

Product recalls are an important corrective action for keeping unsafe products away from consumers. Available data suggest that the volume of product recalls has been growing steadily over the past decade, with millions of non-food products recalled each year by manufacturers and suppliers on a voluntary or mandatory basis. The product categories affected are quite diverse, ranging from electric and electronic devices, toys and childcare equipment, to household appliances and automobiles.

The main drivers of this trend are: i) an increase in the number of products available to consumers worldwide, which continues to grow rapidly with the rise of e-commerce; ii) technology that makes it easier for businesses and authorities to identify the consumers affected by a recall, and for consumers to complain about unsatisfactory products through, for example, social media; iii) more complex and global supply chains that are harder for manufacturers to control, and through which many manufacturers source their components, ingredients and raw materials from a smaller number of suppliers; as well as iv) higher consumer safety expectations, stricter legislation, and enhanced agencies' authority to pursue recalls.

In recent years, a number of cooperation schemes have been implemented at domestic and international levels to enhance the impact of product recalls. These include joint enforcement initiatives among agencies addressing product safety issues, as well as the creation of information sharing tools, such as the OECD's *GlobalRecalls* portal. Moreover, with the growing share of e-commerce that is today taking place through online platforms, partnerships have been established between product safety agencies and online platforms to share information about recalled products and enable the removal of such products from the platforms' listings.

Despite all these efforts, some data suggest that a large proportion of products that have been the subject of one or several recalls over the past decade remain in the homes of consumers, exposing them to threats of injury or even death. Such a challenge may be explained by the following factors:

- The concept of "effectiveness" is understood differently among consumer product safety agencies and the companies affected by a recall.
- Consumer product safety legislation varies across economies, sometimes allowing products that have been the subject of a recall in one jurisdiction to be available for sale in others, both in traditional retail and online markets.
- Not all companies report on the effectiveness of a recall, and some are not always able to measure the scale of the issue, and act on it accordingly.
- Ways to improve communications with consumers remains an important issue to explore. This includes addressing the difficulty that manufacturers and suppliers often have in tracing and contacting the owners of a recalled product in a timely fashion. It also involves understanding what holds back a consumer from responding to a recall notice; despite limited research conducted to date in this area, some behavioural insights literature indicates that:
  - Recall notices are often too lengthy and complex.
  - Some suppliers tend to minimise the risks and hazard levels associated with a recalled product, in an attempt to preserve their brand and reputation.

- Many companies are either unable to dedicate sufficient resources to reach out to consumers, or often choose to limit the implementation of a communication programme at the initiation stage of a recall.
- Consumers often do not spend time reading product recall notices, and even when they do, they either do not understand them or simply choose not to react. This may be due to a number of behavioural biases, such as information overload or over confidence.
- The degree to which consumers react also often depends on a number of factors, such as the value and lifespan of a product, the level of severity of the hazard, the remedies offered to consumers, and ways in which they are contacted.
- Consumers' lack of response has, in some recent cases, resulted in serious consumer injury and death years after a recall was launched, despite repeated attempts from businesses and authorities to alert consumers about the need to return their product.

This report is based on Secretariat research, delegations' responses[1] to a 2017 product recall questionnaire (contained in Annex A), and discussion and comments provided by WPCPS delegates and other stakeholders at, and in follow-up to, an OECD workshop on *Measuring and Maximising the Impact of Product Recalls Effectiveness*[2] (hereafter "the OECD workshop on recall effectiveness") organised on 16 April 2018 as part of the 16th meeting of the WPCPS. It contains three main sections examining:

- domestic and global product recall notification trends involving non-food products sold in traditional retail and *via* e-commerce
- governments and other stakeholders' understanding of the concept of recall "effectiveness", the methodologies developed (or lack thereof) to measure it, and the tools and cooperation initiatives in place at domestic, regional and global levels to enhance product recalls effectiveness.
- some of the factors that should be considered by governments and companies affected by a recall to help develop more effective communication strategies and increase consumer awareness and recall response rates.

The report mainly focuses on the impact aspects of product recalls and does not intend to provide a comprehensive overview of the range of legal requirements, procedures for conducting recalls, and penalties in place at domestic level.

1. Introduction

As provided in the 1981 *OECD Recommendation Concerning Recall Procedures for Unsafe Products Sold to the Public* ("The 1981 Recommendation"), consumers have a right to expect that the products[3] they have purchased are safe under conditions of normal use. In the event unsafe products reach a market, these should be recalled, and consumers warned in a timely and effective manner, while also being offered adequate compensation for any losses incurred (OECD, 1981). As such, consumer product recalls are an important corrective action for keeping unsafe products away from consumers. Through a recall procedure, the main objective for a business is to quickly locate all of its unsafe products and to remove them from the supply chain, while also promptly communicating accurate and easy-to-understand information to the public about the product defect, the nature and risk level of the hazard, and the corrective action to be undertaken. While in most countries the majority of product recalls are initiated on a voluntary basis by businesses, some may be mandatory, following a request from the authorities addressing product safety issues.

A review of the 1981 Recommendation conducted by the OECD Committee on Consumer Policy (CCP) between 1990 and 1992 revealed that, at that time, the level of effectiveness of product recalls remained low due to a lack of:

- minimum requirements for launching a voluntary recall
- standard procedures and guidelines to suppliers for conducting recalls
- product registration tools and evaluation of the efficiency of recall actions
- product safety legislation allowing governments to request the withdrawal of unsafe products from the market.

By 2008, the situation had partially improved, as noted in a CCP report reviewing the state of consumer product safety globally (OECD, 2008). Almost all survey respondents had at that time obtained the legislative powers to recall products on a mandatory basis. However, a number of challenges remained, such as a lack of effective procedures for monitoring and recalling unsafe products from the market.

Ten years on, data from economies, regional, and international product recall databases, such as the OECD's *GlobalRecalls* portal[4], suggest that consumer product recalls have been increasing steadily in size and number worldwide. The product categories affected are quite diverse, ranging from electric and electronic devices, toys, childcare equipment, to household appliances, and automobiles.

Such growth has been driven by factors, such as (OECD, 2016*a*; OECD, 2018*a*; AGCS, 2017; Law Business Research, 2017):

- an increase in the number of products available to consumers worldwide, which continues to grow rapidly with the rise of e-commerce
- technology that makes it easier for businesses and authorities to identify the consumers affected by a recall, and for consumers to complain about unsatisfactory products through channels, such as social media
- growing consumer adoption of products relying on new technologies, such as the Internet of Things, 3D printing, and artificial intelligence, which have been pointed out by some as presenting new safety risks requiring policy attention

- ever more complex and global supply chains that are harder for manufacturers to control, and through which many manufacturers source their components, ingredients and raw materials from a smaller number of suppliers
- higher consumer safety expectations, stricter legislation, and enhanced agencies' authority to pursue recalls.

As a result, a single recall can today affect millions of consumers and impact numerous manufacturers and brands, within and across jurisdictions. Despite this, many suppliers would still underestimate the need for recall planning, training, management and assessment review, potentially exposing themselves to widespread recalls across countries, financial loss, regulatory fines, or criminal penalties, which may all affect trust in their brand and reputation.

Moreover, despite the efforts to increase transparency around the growing number of product recalls, some data suggest that challenges remain for the effective monitoring by governments and businesses alike of removal of unsafe products from the marketplace. As illustrated by the number of incidents and re-launch of major recalls in recent years, a large proportion of the products that have been the subject of one or several recalls over the past decade remain in consumers' homes.

In light of these developments, this report aims to:

- collate and synthesise recall trends involving non-food products sold in traditional retail and *via* e-commerce, including connected products relying on emerging technologies, such as the Internet of Things, artificial intelligence, 3D printing, and blockchain
- examine and compare governments and other stakeholders' understanding of the concept of recall "effectiveness", and the methodologies developed (or lack thereof) to measure it
- review the tools and cooperation initiatives in place at domestic, regional and global levels to enhance effectiveness of product recalls
- identify some of the factors that should be considered by governments and companies affected by a recall to develop effective communication strategies and increase consumer awareness and recall response rates.

The report does not intend to provide a comprehensive overview of product recall procedures, legal requirements, and penalties in countries.

2. Consumer product recall notifications

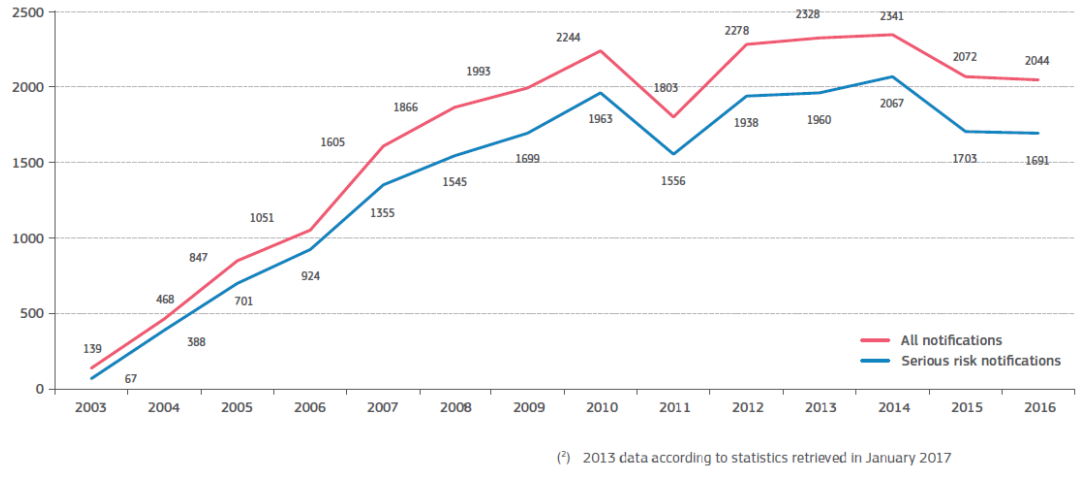
Non-food product recalls rates vary across economies, and can fluctuate by industry sector and product category, making it difficult to measure their frequency and to assess their effectiveness over time. Data from some government and private sector sources however show that over the past decade, consumer product recalls globally have been increasing in both size and number, with millions of products being recalled each year by manufacturers on a voluntary or mandatory basis. Factors driving this phenomenon include the growing complexity of global supply chains, increased transparency and tougher legislation on consumer product recalls, as well as growth of e-commerce. According to some predictions, the emergence of innovative but also more complex connected products using new technologies, such as the Internet of Things, artificial intelligence, and 3D printing, is likely to trigger new product safety and recall risks (OECD, 2018*a*; AGCS, 2017).

2.1. Recall notifications by economy and region

When a company becomes aware that a product fails to comply with relevant safety standards or creates unreasonable risk of injury or death, in most countries, the company is required by law to inform the authorities about it, on an expedited basis. While most agencies worldwide have today the authority to mandate a product recall if a company does not take action on its own, a large majority of recalls are conducted by businesses on a voluntary basis.

Growth in consumer product recalls regulatory oversight and transparency, particularly in developed economies, has helped to enhance business awareness of product recalls, leading to an increase in the number of product recalls worldwide. In the European Union (EU), following the creation of the Rapid alert system for non-food products (RAPEX[5]) in 2003, and the entry into force of Directive 2001/95/EC on General Product Safety in 2004, the number of notifications grew exponentially until 2010, and then stabilised at around 2 000 – 2 500 notifications per year since 2012 (Figure 1).

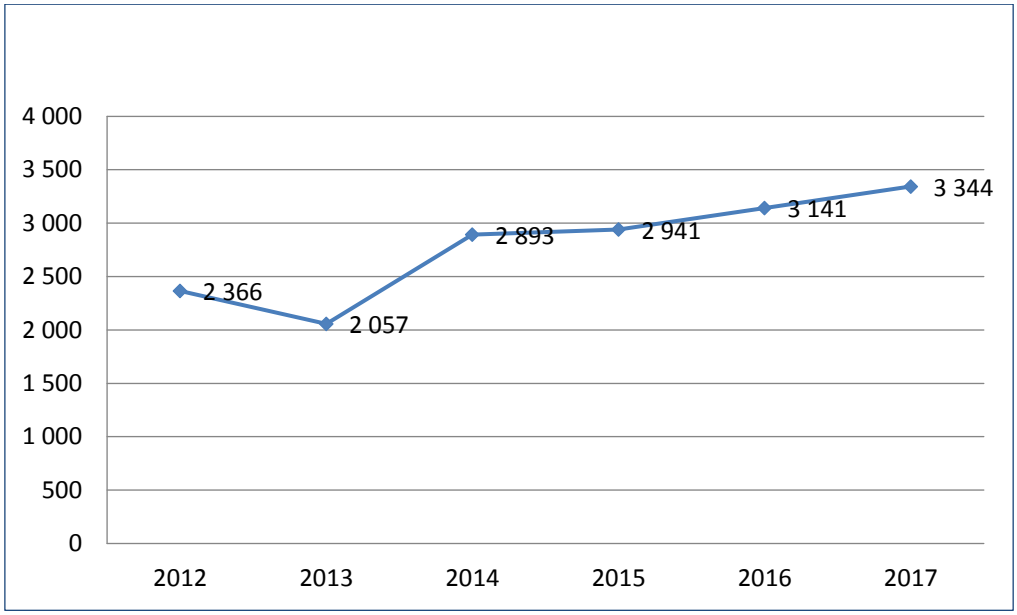
Figure 1. Total number of notifications and number of notifications reporting a serious risk in the EU (2003-16)



Source: EC, 2017*a*.

In 2017, the number of notifications submitted by jurisdictions to the OECD *GlobalRecalls* portal[6] amounted to 3 344, representing a 41% increase from 2012, when the portal was launched (Figure 2). It should be noted, however, that such a growth is not solely based on an increase in the number of recalls in countries, but also on the growing number of jurisdictions that have contributed to the OECD portal between 2012 and 2017.

Figure 2. Number of notifications on the OECD *GlobalRecalls* portal (2012-17)



Source: OECD *GlobalRecalls* portal, at: https://globalrecalls.oecd.org.

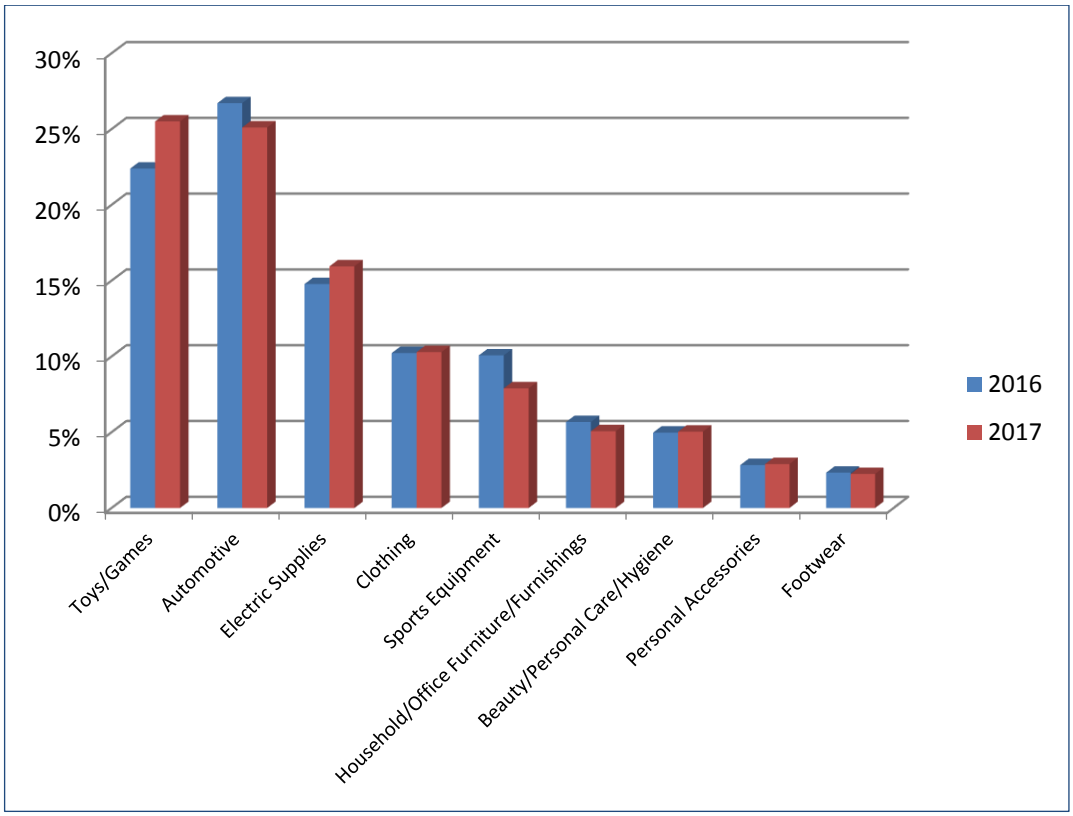
In some developing economies in Asia, such as, the People's Republic of China (hereafter "China"), Singapore, and the Philippines, product safety regulation and consumer expectations are now also rising, and government-led recalls are becoming more common (AGCS, 2017).

According to some research, the number of recall notices should further increase globally, due to divergences in countries' product safety and recall legislation (i.e. the same product may be recalled for different reasons across jurisdictions). Such differences may enable products that have been recalled in one economy to remain available for sale in another, in both traditional and online retail markets (Law Business Research, 2017).

2.2. Recall notifications by industry sector and product category

As shown in Figure 3, automobiles and toys are the two industry sectors that appear to have triggered the largest number of recalls on the OECD *GlobalRecalls* portal in recent years, followed by electric equipment and clothing.

Figure 3. Recall notifications on the OECD *GlobalRecalls* portal per product category (2016-17)

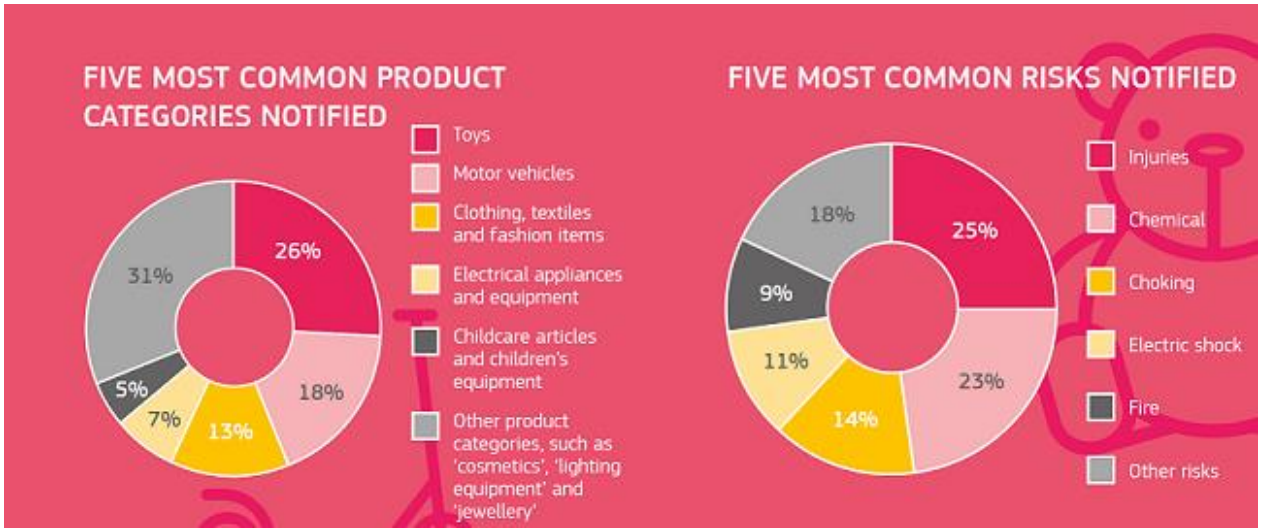


Source: OECD *GlobalRecalls* portal, at: https://globalrecalls.oecd.org.

In Chile, car-related issues have, to date, triggered 90% of product recalls. Some countries' data also show that a growing number of cars were recalled across countries during 2016. This has been the case in the United States where, according to the US National Highway Traffic Safety Administration (NHTSA), 53.2 million vehicles were recalled in the country, over three times as many as during 2012 (16.5 million). This trend has been mirrored across Europe, where, according to private sector data, the total number of automobile recalls has jumped 76% year-on-year in 2016, representing the highest total recorded since the launch of the European Union's RAPEX (AGCS, 2017).

In the European Union, in 2016, toys was the most recalled product category (26%), followed by motor vehicles (18%), as well as clothing, textiles, and fashion items (13%) (Figure 4). From 2004 to 2016, the number of notifications for each of these product categories has remained stable, with the exception of the category clothing, which showed a significant increase between 2008 and 2010, followed by a gradual decrease by 2016. According to the European Commission, such an increase in notifications was partly due to specific coordination efforts among national market surveillance authorities who screened the market with a view to identifying the presence of certain chemicals in some textiles, and cords and drawstrings that can cause injuries and strangulation. Such an initiative was repeated between 2013 and 2014, which resulted in a growing level of awareness among manufacturers of the safety requirements for children's clothing (EC, 2017*a*).

Figure 4. Five most common product categories notified in the EU in 2016



Source: Keeping EU consumers safe – online marketplaces join efforts to remove dangerous products from EU market, Graph 2 (EC, 2017*b*).

In the United States, while some data indicate fewer recalls of toys in 2015, with an 8% decrease from 2014, more incidents and injuries seem to have been reported in 2015 before recalls were issued (Kidsindanger, 2016).

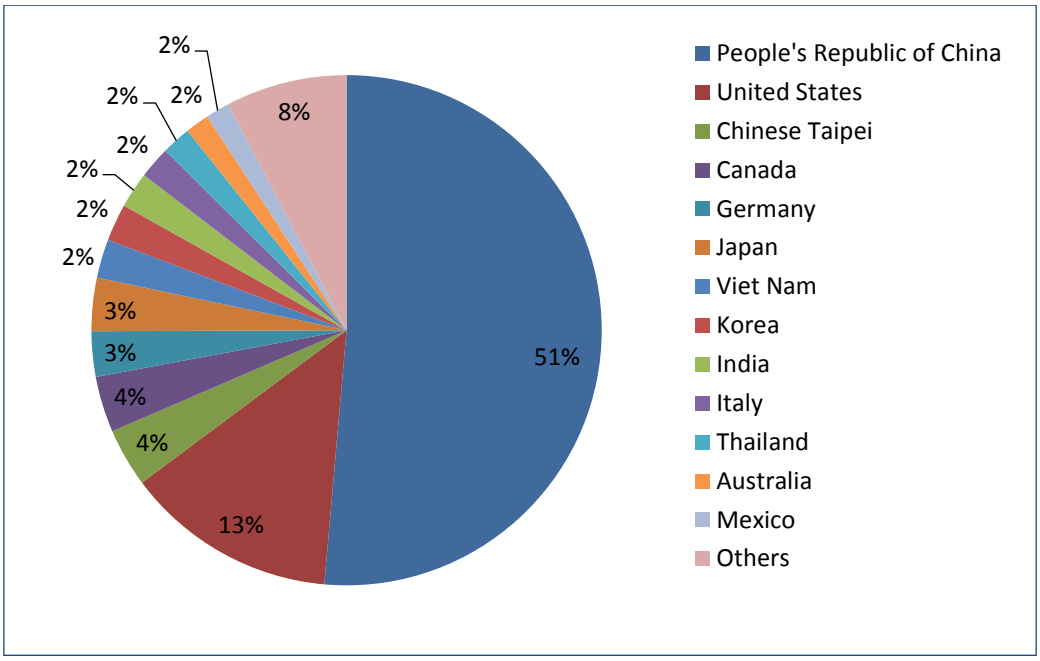
2.3. Recall notifications by origin of manufacturer

According to some research and data available on the OECD *GlobalRecalls* portal (Figures 5 and 6), in 2016 and 2017, products manufactured in China accounted for the highest share of notified recalled products in most economies (Law Business Research, 2017). This may be partly explained by the fact that China is the largest foreign supplier of goods in a number of countries.

This is the case in the European Union[7], where, in 2016, China was identified as the economy of origin for 53% (1 069) of notified products. However, this represented a 9% decrease in the number of alerts on products from China since 2015. Dangerous products of European origin accounted for 468 notifications (23%); 102 notifications (5%) were from products manufactured in the United States, and 53 notifications (2.6%) indicated Turkey as economy of origin. For 158 notified products (8%), the origin was unknown (EC, 2017*b*).

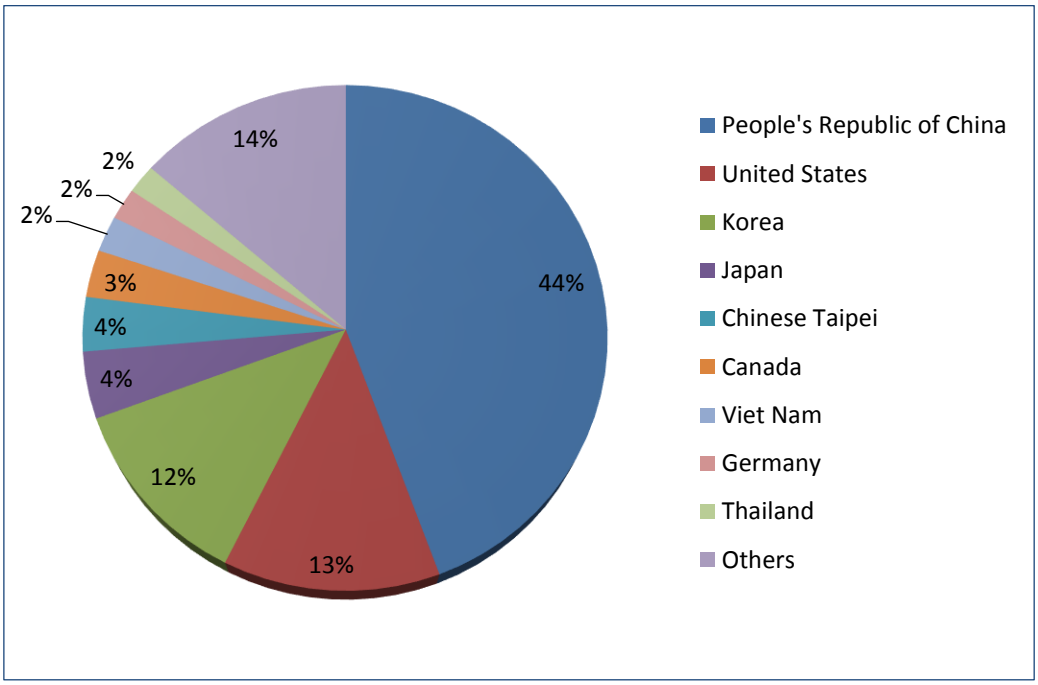
In the United States, according to the US-China Economic and Security Review Commission, since 2012, Chinese products have accounted for the majority of all recalls under the supervision of the US Consumer Product Safety Commission (CPSC). In 2014, Chinese goods constituted 23% of all goods in the United States, representing 51% of all product safety recalls posted by the US CPSC that year (US-China ESRC, 2017).

Figure 5. Recall notifications on the OECD *GlobalRecalls* portal by origin of manufacturer (2016)



Source: OECD *GlobalRecalls* portal, at: https://globalrecalls.oecd.org.

Figure 6. Recall notifications on the OECD *GlobalRecalls* portal by economy of manufacturer (2017)



Source: OECD *GlobalRecalls* portal, at: https://globalrecalls.oecd.org.

2.4. E-commerce

In 2015, on behalf of the WPCPS, the Australian Competition and Consumer Commission (ACCC) coordinated an OECD international online product safety sweep in which 25 jurisdictions participated to identify online product safety-related trends and challenges. Of the 685 products inspected for the purpose of detecting banned or recalled products, slightly more than two-thirds (68%) of those products were available for sale *via* e-commerce (OECD, 2016*b*). The availability of such products online may be explained by the following factors (OECD, 2016*a*; OECD, 2016*b;* EC, 2017*d*):

- While, on the one hand, the Internet enables businesses to sell products *via* an expanded range of channels and platforms, at domestic and cross-border levels, on the other hand, businesses face growing difficulties to track, trace, and remove their unsafe products from the online market (despite increased access to customer data).
- Market surveillance authorities also face growing difficulties to trace products online and identify the responsible economic operators, including those located outside the European Union, who are becoming more prevalent.
- Many businesses appear to be unaware of their product safety obligations when trading across e-commerce borders. With a myriad of elements to consider when establishing and managing a business, it is likely that product safety considerations are given less attention (Small Business Trends, 2018).
- Market surveillance authorities further report challenges in conducting risk assessments or safety tests due to a lack of physical access to products.
- Sampling products for testing is often difficult as laws in some countries do not permit online or anonymous purchases (such as mystery shopping).

Such an issue has been identified in the 2016 *OECD Recommendation of the Council on Consumer Protection in E-commerce*, which provides that businesses engaging in e-commerce should (OECD, 2016*b*):

- not offer, advertise or market, goods or services that pose an unreasonable risk to the health or safety of consumers
- co-operate with the competent authorities when a good or a service on offer is identified as presenting such a risk
- take into account the global nature of e-commerce and consider the various regulatory characteristics of the markets they target
- provide consumers with information describing the goods or services offered that is sufficient to enable them to make informed decisions regarding a transaction (depending on relevant factors, including the type of good or service, this should include information such as safety and health care information, and any age restrictions).

In the European Union, a number of the dangerous products notified in the RAPEX have been identified as available for sale online. To address the problem, several national authorities have set up teams to monitor online retailers and online platforms' webpages and to trace dangerous products sold online. Since June 2016, under the RAPEX-China system, which enables information sharing on unsafe products between the EC and the Chinese authorities, emphasis has been placed on the safety of products sold online (EC, 2017*e*).

2.5. The impact of new technologies on product recalls

2.5.1. Internet of Things and artificial intelligence

As described in recent WPCPS reports on the Internet of Things (IoT) and product safety (OECD, 2018*a*), the IoT may bring a number of benefits to businesses and consumers alike, such as enabling businesses to:

- track and trace products, and identify hazards across supply chains
- remotely monitor the use of their products, identify and fix product defects through software patches, thereby avoiding the need for a recall and reducing consumer recall fatigue
- identify the need for a recall in a timely and effective manner
- alert consumers about a recall
- remotely switch off recalled connected products that remain in consumers' hands.

The recall by Samsung of 4.6 million Galaxy Note7 phones is an example of how the IoT can help to mitigate the risks posed by a recalled product. In addition to sending over 23 million recall alerts and push notifications to its customers, Samsung conducted a software update that reduced the battery capacity of the phones that were still in consumers' hands to up to 0% (OECD, 2018*c*).

Despite the above-mentioned promises, growth of the IoT market is predicted by some to bring new safety risks and potentially more recalls due to the growing complexity of the products. For example, software that does not present any defects when commercialised, but that creates problems, once updated, may raise compliance issues. Likewise, the growing number of digital security risks and incidents that have affected the safety of a range of connected products, such as cars, medical devices, or childcare equipment, has attracted attention in recent years. For example, in 2015, Chrysler recalled 1.4 million vehicles whose software presented a vulnerability flaw, thereby opening up the possibility for hackers to remotely control the cars, cut the brakes, shut down the engine, or drive them off the road (CNN Tech, 2015). In August 2017, the US Food and Drug Administration ordered a recall of about 500 000 pacemakers to patch digital security vulnerabilities (The Guardian, 2017).

Moreover, the degree to which those connected devices that are combined with artificial intelligence (i.e. a technology that is designed to learn from interactions with its surroundings and alter its behaviour accordingly, over time) may present safety risks throughout their lifecycle, is receiving increased attention at the EU and global levels[8]. The issue has been recently raised in the United States by the National Highway Traffic Safety Administration in a case involving the death of a driver of a Tesla connected car on auto pilot mode, which failed to distinguish a white tractor trailer crossing the highway against a bright blue sky (CNN Tech, 2016).

2.5.2. 3D printing

Like the IoT, 3D printing is regarded as a promising technology that will provide consumers with the possibility to customise, refine or repair their products in cheaper ways, and to have those conveniently printed at home or in local stores.

It is however also seen as a disruptive technology that brings into global supply chains new entrants into production, such as consumers, who may act as product designers and/or manufacturers while, however, being neither experienced or aware of the potential hazards

that may be created by 3D printing, nor familiar with relevant safety principles for product design, and manufacturing. Consumers may in such context produce, and sell to other consumers, unsafe 3D printed products that should be, or have been recalled from the market.

Moreover, similar to the IoT, 3D printing may raise security concerns, and consumers should be made aware of its limitations and risks, ideally, at the point of sale. According to some research, hackers might be able to target 3D printers and secretly introduce internal defects in the manufacturing process. A corrupt file can result in product failures, leading to potential injuries or product recalls (CISION, 2016).

How unsafe 3D printed products may be tracked and the consumers concerned identified to receive a recall alert may be a challenge, for both consumer product safety authorities and relevant actors in the 3D printing supply chain.

2.5.3. Product tracking and traceability: The promises of blockchain

As discussed above, the degree to which businesses (and market surveillance authorities) can track and trace products, especially high-risk products, into the hands of consumers, is an important factor affecting their ability to identify the need for a recall and assess recall effectiveness.

However, as noted in the 2018 WPCPS report on IoT and product safety, the emerging use, by businesses, of blockchain technology,[9] could help to address this issue. This has already been the case in the food sector where initiatives, such as the IBM's Food Trust system,[10] have helped to conduct more targeted recalls and ultimately reduce the average cost of a recall by up to 80% (Forbes, 2018). With respect to non-food products, new blockchain projects are being developed for the purposes of tracking and tracing a range of products, from auto parts to medical devices. These include Microsoft's Project Manifest, which includes sponsors like Mojix, Amazon, FedEx, Target, and Home Depot, and aims to be implemented through their supply chain (Microsoft, 2017; OECD, 2018*a*).

3. Consumer product recall correction rates

3.1. Trends and factors affecting recall correction rates

Correction rates, also known as return rates (understood as the number of products returned by consumers and retailers following the release of a product recall notice and other related communications), vary widely across economies, and from one product category to another.

In the United States, the CPSC reports an overall correction rate of 65% for those closed cases that had a corrective action plan between fiscal year 2013 and 2016 (US CPSC, 2018*a*). It should be noted that this rate, which takes into account corrections from not just consumers, but also manufacturers, distributors, and retailers, prompts a level of response that is higher than when focus is limited to consumer return rates (Figure 7). In Australia, the average return rate for voluntary consumer product recalls (excluding motor vehicles) is 49%. In France, such a rate rarely exceeds 10%, except when products have been purchased online, which makes it easier for suppliers to contact and alert their customers about a recall. For example, in one instance, a 60% return rate was reached for an alcohol breathalyser that had been sold exclusively online. In Switzerland, rates vary considerably, between 3% and 95%. By contrast, Costa Rica reports on a 100% return rate, noting however that the number of product recalls in the country is rather low.

In some countries, such as Japan and Canada, data on return rates are not available as many incidents are not reported by consumers, suppliers do not share recall effectiveness information with authorities, and a recall, which may have been regarded at some point as effective, may, over time, be affected by additional serious injuries or deaths.

Response rates depend on a variety of factors, such as:

- product traceability across supply chains
- product lifespan
- timespan between when a product is sold and when it is recalled
- product price
- consumers' awareness of a recall and its applicability to them
- communication methods and frequency of communicating with consumers
- ease of rectifying the issue and range of remedies offered to consumers
- the risk level of the product and severity of the injury suffered by consumers.

As products move down the supply chain, their traceability tends to diminish. When manufacturers are still in control of a recalled product in their warehouses or with a retailer, the success rate is higher. Once, however, a product is in consumers' hands, the success rate is lower (Kidsindanger, 2016). Product traceability may also be affected when a significant period has lapsed between when the product was sold and when the recall occurs; as a result, fewer units tend to remain in use (OECD, 2018*c*). In some countries, some tools and initiatives have been implemented by businesses to enhance product tracking and traceability. These include product registration at a point of sale, which is regarded as a useful tool to trigger higher correction rates. In the European Union, in 2016, most reactions concerned notifications about automobiles, a category of products which is systematically traceable, thanks to vehicle registration rules (EC, 2017*a*). In the United Kingdom, the Association of Manufacturers of Domestic Appliances maintains a website[11]

through which consumers can register their appliances and receive alerts about any recall affecting the product they have purchased. However, accessibility to product registration methods alone is not enough to increase traceability. The registration process itself needs to be simple for consumers to complete; multiple steps or tedious requirements will cause consumers to disengage with the process or procrastinate (OECD, 2018*c*). In order to enhance consumer engagement in product registration, the UK government[12] is exploring the possibility of conducting research to better understand what makes consumers register their products or not, and how to effectively encourage them to do so (UK BEIS, 2017).

If a product has a short lifespan, consumers may consider that disposal is easier than responding to a recall notice or may have already disposed of the product well before a recall announcement. Authorities and businesses do not have a way to measure the degree to which consumers stop using a recalled product or throw it away instead of taking advantage of a recall remedy. By contrast, when products have a longer lifespan and potential availability in the second hand market, higher response rates may be obtained. It should be noted that today, products tend to be cheaper and have a shorter lifespan than those manufactured in the past decades, including products such as whitegoods. For example, the lifespan of a washing machine has dropped by three years within one decade (BBC, 2014).

Figure 7. US CPSC data on Consumer Correction Rates by Retail Price (fiscal year 2016)

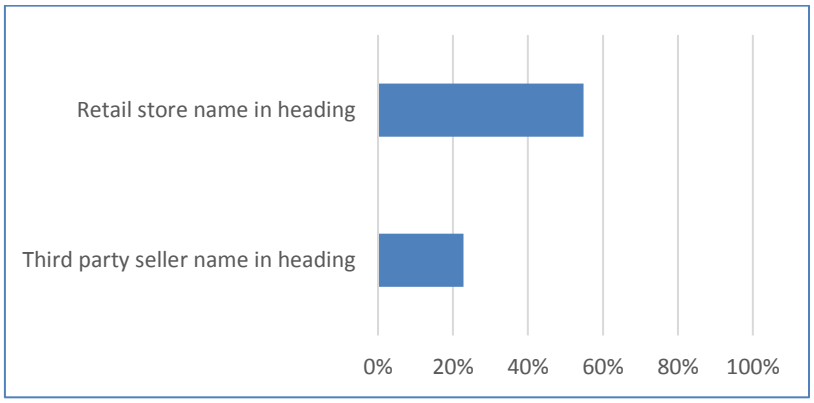
Source: Presentation on CPSC Defect Recall Data at US CPSC's Recall Effectiveness Workshop held on 25 July 2017 (Slide 6), at: https://fr.slideshare.net/USCPSC/cpsc-recall-effectiveness-workshop-recall-data. Values on the horizontal axis are in USD.

Price points also appear to be an important driver of consumer motivation to participate in a recall. According to data from the US CPSC, for fiscal year 2016, consumer responses tend to be above 30% when product prices are above USD 5 000 (Figure 7). Expensive products, such as automobiles and home appliances, tend to trigger high response rates, as is the case in Korea. By contrast, low value products, as well as those that are "consumed" by consumers and may not be returned when a problem arises (such as electric cables), tend to trigger low return rates in most countries. In Australia, toys demonstrate the lowest return

rate, between 12 and 34%. In the United States, only 14% of children's products recalled in 2014 were successfully corrected, replaced or returned (Kidsindanger, 2016). On average, the response rate to children's product recalls in the United States amounts to 10%, making it 20% lower than the average response rate for most consumer products in the country (OECD, 2018*c*).

Another factor that may contribute to low return rates is the lack of brand recognition by consumers at the time of a recall. An analysis conducted by the ACCC between 2014 and 2018 of recalled products from a large Australian home improvement retailer showed that the recall notices that included the retailer's name in their heading achieved a 40% higher consumer return rate than the recall notices that only identified the brand of a third party seller (Figure 8).

Figure 8. Average consumer return rates of recalled products based on brand recognition

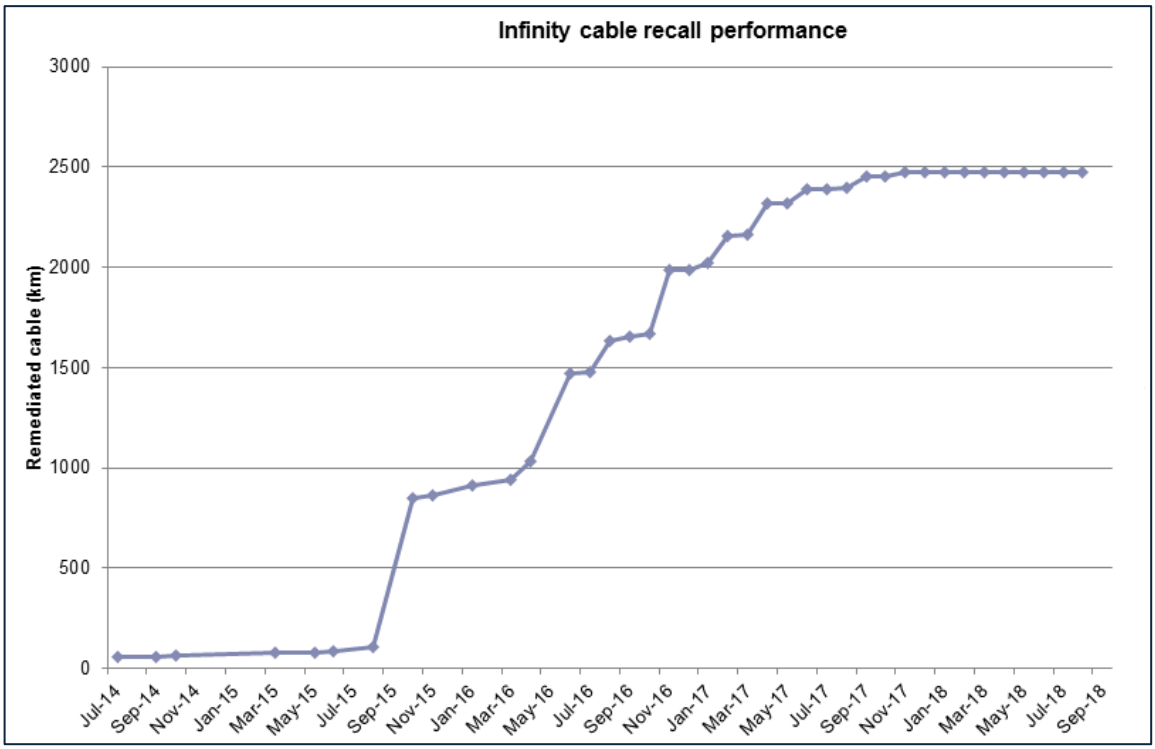


Source: Data provided by the ACCC in 2018.

Scrutiny by regulators and influencers (such as media and high profile consumers) of progress made by companies in the implementation of their recalls can also help to increase consumer reaction rates. For example, in Australia, the Infinity Cable recall[13] has involved regular monitoring from both the ACCC (as a national product safety regulator) and the state-based electrical safety agencies, supported by periodic communication programmes. Figure 9 shows the upward trend in remediation since July 2015 when the first national communication programme was launched by the ACCC and state-based regulators (involving online and radio advertising, and media initiatives) along with regular monitoring at state and federal levels.

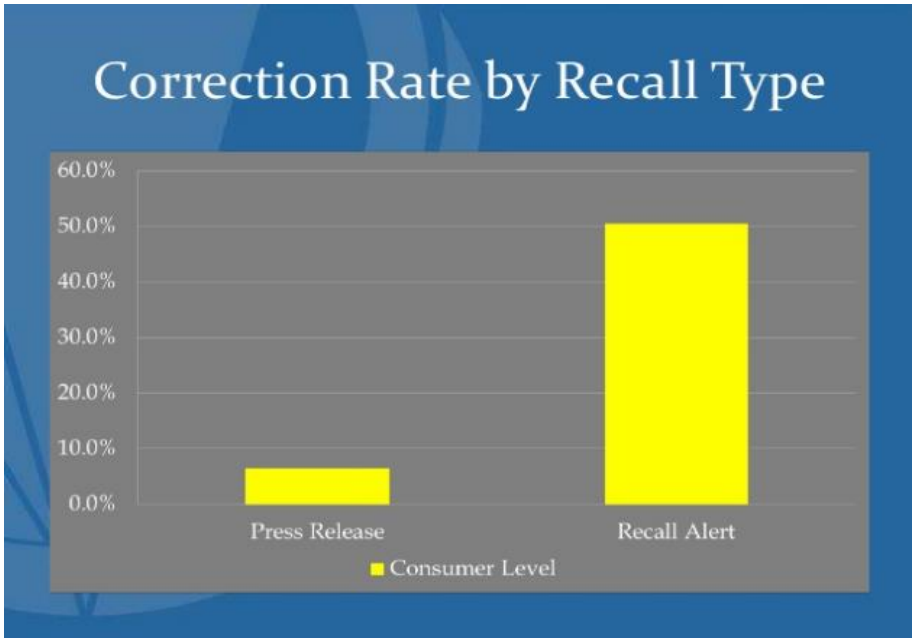
The way in which consumers are contacted and recall messages are framed can also affect reactions to a recall. When contacted directly, by, for example, e-mail, SMS, or via an app alert, consumers tend to react more actively. According to the US CPSC, when consumers are contacted through recalls alerts, the consumer correction rate is at 50%, against 6% in the case of a press release (Figure 10). Likewise, recalls picked up in the media are more likely to trigger consumer reactions. Personalised, concise and simple messages are considered vital in ensuring that consumers understand a recall message, the risk at stake, and the need for action (OECD, 2018*c*).

Figure 9. Increase in the Infinity cable recall's performance post regulators' monitoring in Australia



Source: Presentation from the ACCC on Communicating more effectively with consumers, OECD Workshop on Measuring and Maximising the Impact of Product Recalls held on 16 April 2018.

Figure 10. US CPSC Data on Correction Rate by Recall Type (fiscal year 2016)



Source: Presentation on CPSC Defect Recall Data at US CPSC's Recall Effectiveness Workshop held on 25 July 2017 (Slide 9), at: https://fr.slideshare.net/USCPSC/cpsc-recall-effectiveness-workshop-recall-data.

The remedies offered in response to a recall can also influence consumer reactions. To entice consumers into reacting, a range of options exists, and many jurisdictions' recall guidance outline the options of providing consumers with a full refund, replacement or repair of a product. However, in most circumstances, it is up to the supplier to decide which type of remedy may be offered (Box 1).

Box 1. IKEA's remedies for the MALM and other models of chest and drawers recall

Consumers should immediately stop using any recalled chest or dresser that is not properly anchored to the wall and place it in an area that children cannot access.

Contact IKEA for a choice between two options: refund or a free wall-anchoring kit.

IKEA will pick up the recalled dressers free of charge or provide a one-time, free in-home wall-anchoring service for consumers upon request.

Consumers can obtain assistance from IKEA through its website at www.IKEA-USA.com or http://www.ikea.com/ms/en_US/ikea-chest-and-dresser-recall/index.html.

Consumers with chests and dressers manufactured prior to January 2002 are eligible for a partial store credit.

Source: (US CPSC, 2017).

Some remedies, such as a refund or credit, may only be offered by suppliers when consumers have provided them with evidence of the product disposal or destruction, which may be made through the following means:

- The submission of an online form.
- Written notification confirming the disposal.
- Demonstration of the destruction of the product (e.g. by cutting a piece of the product and sending it to the supplier, or by sending photos of the destroyed product).

Finally, when consumers have not been affected by a safety issue associated with a product that has been recalled, either directly or indirectly (e.g. knowing someone who has reported harm) they may be less likely to respond to a recall notice. The level of severity of the injury suffered by other consumers may however attract the attention of other consumers who have, and keep using the product, but have not yet suffered any injury or damage. For example, Korea points to a high consumer response rate in a case where about 260 consumers died and 4 000 reported health issues following usage of humidifier disinfectants containing toxic chemicals (CI, 2016).

3.2. Recall effectiveness measurement

3.2.1. The concept of "effectiveness"

Measurement of product recalls effectiveness is not an easy task. It varies across economies, and from business-to-business. Not all countries have developed a methodology to assess recalls effectiveness, and the concept of "effectiveness" itself is

understood differently among authorities and businesses. It should also be noted that the return rate may vary based on the level of risk involved.

Some countries, such as Japan, Korea, and Switzerland, define recalls effectiveness by comparing the number of recalled products against the number of products sold. Others consider that measuring recalls effectiveness only by the percentage of product return rates does not provide a complete picture. Factors such as the communication method used to advertise the recall, the type of product being recalled, the hazard posed by the product, its price, any incidents and injuries suffered by consumers since the recall was advertised, and the engagement of a regulator in the recall process, are also relevant considerations in evaluating recalls effectiveness.

In Denmark, the following target return rates are used per product price ranges to determine recalls effectiveness[14]:

- 10% for low value products (DKK 0-200 (approximately EUR 30)). Use of such a low rate is based on the assumption that consumers often throw away low value products.
- 50% for products whose price ranges between DKK 200-5 000 (approximately EUR 700).
- 95% for high value products (DKK 5 000 and more).

Similar to Denmark, Australia has target product return rates; these are however neither provided to suppliers nor disclosed publicly. Instead, suppliers are encouraged to aim for the highest return rate (i.e. as close to 100% where possible). In Australia, an active recall is considered effective if there is: i) evidence that the actions proposed by the product supplier are being undertaken; ii) an increase over time in the return rate; and iii) an absence of consumer complaints about conduct of the recall or reports of injury or near-miss associated with use of the product. The ACCC assesses the effectiveness of a recall each time a progress report is submitted, taking into consideration some or all of the following factors:

- return rate
- methods used to sell the product and to communicate the recall
- potential hazard that the product poses and likelihood of the hazard occurring
- number of products sold to consumers and the dates when they were sold
- approximate cost and lifespan of the product
- mandatory injury reports relating to the product (if any)
- number of complaints made about the product (if any)
- average return rate for recalls of similar products
- supplier compliance (responsiveness, timely progress reports).

3.2.2. Recall effectiveness reporting obligations

While most agencies worldwide can mandate a product recall if a company does not take action on its own, not all countries require suppliers to report on the effectiveness of their recalls.

In Japan, suppliers are to report on the implementation of mandatory and voluntary recalls to the Ministry of Economy, Trade and Industry (METI). In Korea, businesses are required to submit a report on the status of implementation of a recall within three months of the launch of the recall. If the rate is low (below 50%), Korea Consumer Agency contacts the recalling company to encourage further implementation. In Costa Rica, businesses must submit a report to the Directorate for Consumer Support at the end of the recall period (one year) so the agency can assess compliance with its decision on the scope of the recall in the market. Likewise, in Switzerland, all recalling companies must inform the authorities about return rates.

By contrast, in Canada, there is no legal requirement for a recalling company to report on the effectiveness of their recall to the authorities, and the onus to measure the effectiveness of a recall is on the company concerned by the recall. However, Health Canada can undertake recall monitoring across supply chain actors to ensure others in the supply chain have been duly notified of the recall by the recalling company. If there are concerns with the notification, the agency can contact the recalling company and further actions may be required. In Australia, while companies are not legally required to report on recalls effectiveness, most suppliers voluntarily comply with the ACCC's requests for information. If the ACCC has concerns about a recall and the supplier does not provide adequate information voluntarily, the ACCC can request disclosure of information where deemed necessary.[15]

In some countries, guidance has been developed to help suppliers assess the effectiveness of their recalls.

In Australia, the ACCC, in consultation with state and territory product safety regulators, issued *Consumer Product Safety Recall Guidelines* to help suppliers plan for, and respond to, an incident requiring the recall of potentially unsafe consumer products (ACCC, 2015*b*).

In Canada, guidance was released by Health Canada in 2017 to provide industry with key considerations to take into account when measuring effectiveness (Table 1).

In Japan, voluntary recalls are expected to be conducted on a regular basis, consistent with the *Recall Handbook* issued in 2016 by the METI in this area (METI, Japan, 2016). For mandatory recalls, suppliers' reports must also be developed and publicised, consistent with the *Recall Handbook.*

In the United States, the US CPSC released a *Recall Handbook* to help product manufacturers, suppliers and retailers identify their reporting requirements, learn how to recognise potentially hazardous consumer products at an early stage, and develop and implement "corrective action plans" addressing the hazards (US CPSC, 2012).

More recently, in the United Kingdom, in March 2018, the government's released a *Code of Practice,* which includes details on how market surveillance authorities, such as local authority Trading Standards can support businesses in their monitoring of incidents and their implementation of corrective action (UK BEIS, 2018).

Such codes and guidelines are seen as helpful tools for businesses to plan, implement and monitor a recall. However, in their responses to the OECD questionnaire, some authorities pointed to the need to ensure that the required reporting and other administrative interactions with the authorities be balanced and assessed against businesses' capacity to provide such information, including small businesses (and see Out- law.com, 2018).

Table 1. Guide for voluntary recall of consumer products or cosmetics in Canada: Recall effectiveness best practices for companies (Health Canada)

What to review	Action
The recalling company reviews the overall recall process	Make certain the recall corrective action plan has been implemented.
The recalling company assesses supply chain customer feedback	Verify the following: • All supply chain customers notified. • Number of supply chain customers that responded back. • Number of units destroyed, returned and/or corrected by supply chain customers. If very few supply chain customers confirm receipt of the information or respond back, more effort may be required to reach out to them to confirm actions have been taken.
The recalling company assesses consumer information feedback	Determine the following: • Number of consumers that have contacted your company. • How consumers learned about the recall to help analyse the effectiveness of various communication channels. For example, review evidence related to effectiveness of the communication strategy, such as the number of 'visitors' accessing the relevant webpage or social media site. • Number of units returned, exchanged, refunded and/or provided repair kits. If very few consumers have responded, more work may be required to understand why and possibly more outreach may be necessary to ensure corrective measures, as outlined in the recall notice, are followed.
The recalling company reviews incident data	Determine if any additional reported incidents occurred after the recall was published. The goal of a recall is to warn consumers who have the product of the dangers associated with it, and to remove any remaining products from the marketplace. Incidents that occur in Canada after the recall may be an indication of an ineffective recall, and may warrant further examination into a company's actions to communicate it.

Source: Health Canada, 2017.

3.2.3. The challenge of managing and monitoring recalls effectiveness

In most countries, prioritisation for recall monitoring is based on the risk level of a product, taking into account the severity and imminence of the danger that such a product can present to human health or safety. Other factors, such as the lifespan or price of a product are also considered and weighed. If a recall is regarded as ineffective, and unsafe products remain on the market, or a company continues to receive incident reports about a recalled product, the authorities may invite or request a company to extend, re-announce or modify its recall strategy to improve recall effectiveness. Any additional steps that a company takes regarding the recall are to be communicated to the product safety authorities in most countries.

As noted by delegations at the 2017 WPCPS' informal roundtable on consumer product recalls, convincing consumers to return products a number of years after a recall is launched is a challenge. According to some research, a 10% effectiveness rate is lost every additional year the product is in the market (US CPSC, 2003). Such a lack of consumer reaction may bear dramatic consequences for consumers, as has been for example the case in 2015 in the United States where a teenager died as a result of a Takata airbag which exploded following a car accident. His parents, who were the second owners of the car, had been alerted in vain by the car manufacturer (like the first owners of the car through several recall notices sent from 2010-12) that the car was among the models that had been the subject of a recall (SAGE Business Researcher, 2017). The Takata airbag recall is the largest ever and an ongoing recall that started in 2008 and has affected hundreds of millions of vehicles containing exploding Takata airbags, in countries such as Canada, Japan, Australia, China, Malaysia, the United States, and EU Member States. Worldwide, there have been at least 23 deaths and over 230 serious injuries reported as associated with defective Takata airbags (Treasury, Australia, 2018).

Another challenge is regulatory fragmentation across consumer product safety jurisdictions, which can result in a situation where a product being recalled in one economy is not subject to a recall in another. To address the issue and assist businesses in conducting consistent recalls globally, at the OECD workshop on recall effectiveness, participants called for the development of global standards on product recalls and product safety (OECD, 2018*c*). In recent years, some governments have embraced international standards; for example, in Australia, the consultation[16] launched in 2017 on the review of the product safety toy regulations included an option for suppliers to either comply with the updated voluntary Australian standard or existing international standards.

Regulatory fragmentation can also affect ways in which a business may conduct a recall across countries. For example, when Samsung implemented a software update aimed to reduce the battery capacity of its Galaxy Note7 phones, the company could not reduce it to 0% in all jurisdictions. In Australia, the Consumer Law prohibits a company to take products away from consumers or to prevent them from using products, with no exemption for safety (ACCC, 2013). Consistent with such regulation, Samsung reduced the battery capacity of the phones to only 60% in the country.

3.3. Recall effectiveness cooperation initiatives

3.3.1. Cooperation at domestic level

Many countries have established product recall websites, and a growing number have created domestic databases, to strengthen product recall awareness and effectiveness. These include Canada, the United States, France, Australia, Mexico, Japan, and Korea; other countries, such as the United Kingdom, are exploring the possibility to do so.

By contrast, only a few countries have to date conducted joint product recall initiatives at the domestic level. In Australia, the ACCC hosts and maintains the *Product Safety Australia* website[17], which includes a dedicated section for consumer product recalls, including those that are administered by other agencies in the areas of, for example, electrical products and motor vehicles. Examples of multi-regulator monitoring include the:

- recall of Infinity cable, which is monitored by a Taskforce of the ACCC and state and territory electrical safety regulators

- initial voluntary recall of Takata airbags, which was the subject of assessment by the ACCC and monitoring by the Department of Infrastructure, Regional Development and Cities (Australia's regulator for motor vehicles)[18].

In Japan, the Consumer Affairs Agency (CAA), relevant ministries and other agencies, share information about serious product accidents, and, where relevant, issue a joint press release with a view to enhancing consumer awareness of such accidents. For example, in 2018, the Ministry of Economy, Trade and Industry (METI) and CAA made a simultaneous announcement of a recall of an imported air-conditioner, which had caused fires. In the same announcement, the agencies promoted an old recall notice of a dishwasher, many units of which remained in consumers' homes and had caused fires. While neither recalls had led to injuries or death, both were promoted to prevent any accidents (CAA and METI, Japan, 2018*a*; CAA and METI, Japan, 2018*b*).

In Iceland, the consumer agency cooperates with several agencies, including the Icelandic Transport Agency with respect to car recalls.

3.3.2. International cooperation and information sharing

At regional and international levels, a number of schemes and tools have been implemented to strengthen the effectiveness of product recalls within and across borders. These include cooperation agreements among authorities addressing product recall issues; regional and global product recall databases; as well as cooperation initiatives between consumer product safety authorities and online platforms.

Co-operation agreements and initiatives

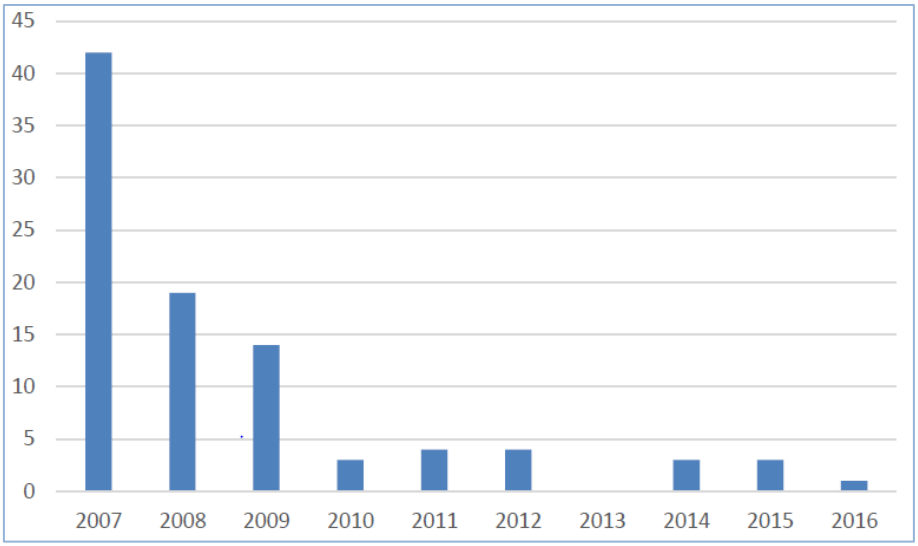
Examples of cooperation include bilateral agreements established between the European Commission and regulators in, respectively, the United States, and Japan, and between China and, respectively, Japan and the United States. The US CPSC and China's General Administration for Quality Supervision, Inspection and Quarantine (AQSIQ) have also been cooperating for a number of years on product safety matters. In September 2007, following a major recall in the United States of toys imported from Hong Kong containing 50 times the amount of lead paint allowed under US legislation, China and the United States signed an agreement aimed to strengthen product safety cooperation. By the end of 2007, the US CPSC had issued 42 different recalls for excessive lead levels in toys, pulling back 17.6 million contaminated units. China responded quickly to the problem through the issuance of a paint certification system, and the sharing of information with the US authorities. In 2011, the US CPSC established its first overseas office to maintain cooperation with Chinese regulators and provide safety training. By 2016, these cooperative efforts proved successful with a significant decline in the number of recalls associated with lead paint in children's products in the United States (Figure 11).

Trilateral cooperation initiatives have also been implemented between the European Commission, the US CPSC and China's AQSIQ. Under the scheme, the tripartite authorities aim to strengthen cooperation on recalls of hazardous consumer products and provide notification to each other as early as possible if recalled products are known to be sold in their jurisdictions (EC, 2016). The authorities hold trilateral summits on a regular basis (EC, undated).

In Australia, once aware of an international recall, the ACCC coordinates the publishing of the recall notice and shares any relevant information with international counterparts. For example, in 2018, a toy recall[19], which affected both Australian and New-Zealand[20]

consumers, led to an information sharing process between the product safety agencies to ensure consistent messaging within the notice.

Figure 11. Recalls of children's products with lead paint in the United States (2007-16)



Source: US CPSC, *Toy Recall Statistics*, at: https://cpsc.gov/Safety-Education/Toy-Recall-Statistics, cited in US-China ESRC, 2017.

Regional and global recall databases

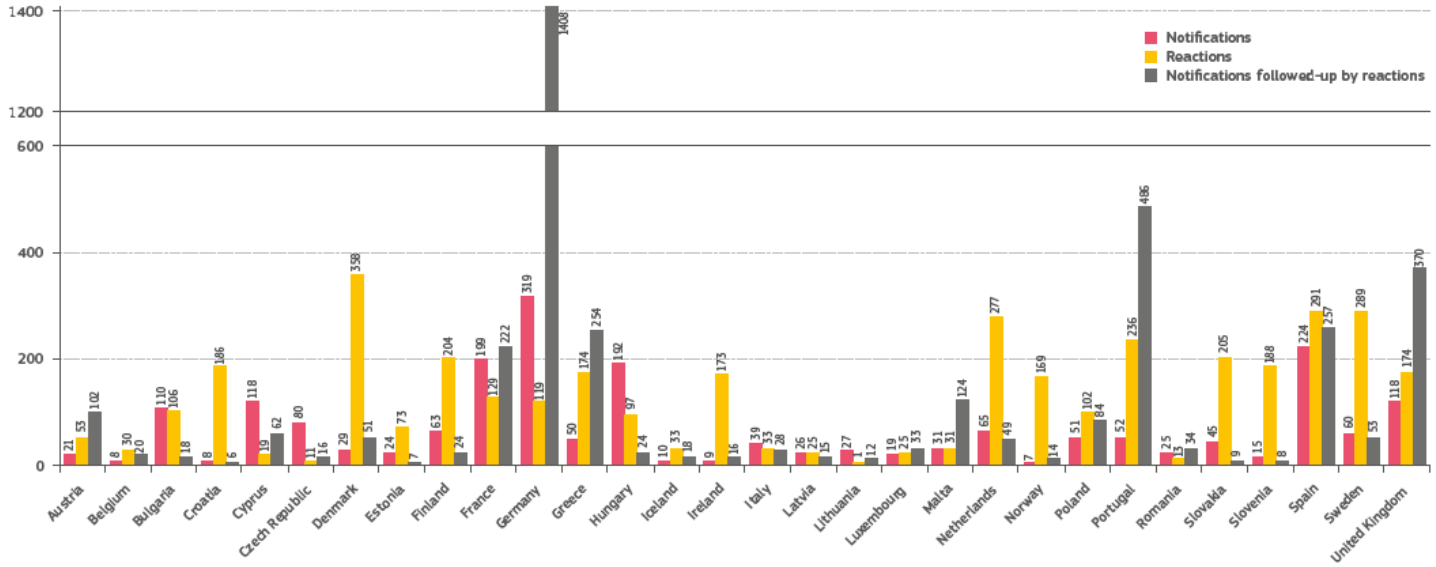
A number of product recall databases have been created at regional and global levels to help record and share recall data in a systematic and transparent manner.

In the European Union, as mentioned above, EU Member States' authorities provide information on recall notifications to the RAPEX through which around 50 alerts are registered on a weekly basis. The system also includes statistical information on countries' reactions to EU-wide recall notifications. Consumers and businesses can now also create and personalise their own subscriptions to alerts according to their needs and preferences, and share alerts through social media. Between 2014 and 2016, the number of reactions registered shows a substantial increase in most countries, with the highest increases registered in Croatia, Denmark, Estonia, Ireland, Poland, Portugal, Slovenia, Slovakia and Sweden, mostly due to reactions concerning notifications on motor vehicles (Figure 12). The categories of measures undertaken as a result of such reactions include the withdrawal of the dangerous products from the market, bans that restrict future sales of the product, and rejection of imports (EC, 2017*a*).

Since 2006, a systematic exchange of information on notifications concerning dangerous products of Chinese origin signalled by EU Member States has been established between the European Union and China through the "RAPEX-China System". As mentioned above, such cooperation has been reinforced since June 2016 with particular emphasis on the safety of products sold online.

Similar product recall information-sharing systems have been established by other regional fora, such as the ASEAN's Product Alert system[21], and the Inter-American Rapid Alerts System[22] (SIAR), which is maintained by the Organisation of American States' Health and Safety Consumer Network.

Figure 12. Total number of notifications, reactions and notifications that were followed by a reaction in 2016, by EU economy[1]



Source: Keeping EU consumers safe – online marketplaces join efforts to remove dangerous products from EU market, Graph 1 (EC, 2017*a*).

[1] Note by Turkey:

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

At the global level, the OECD *GlobalRecalls* portal was created in October 2012 to facilitate the rapid exchange of information about product recalls worldwide, and to enhance unsafe products' detection across borders (OECD, 2008; OECD, 2010*a*). The portal uses the international product classification system provided by GS1[23], a not-for-profit organisation that develops global standards and solutions to improve the efficiency and visibility of supply chains across industries. The portal is undergoing a series of technical improvements, including the integration of global product recalls taxonomy, to enhance user experience and search capabilities on the portal.

3.3.3. The role of online platforms

The growing share of e-commerce that is taking place through online platforms appears to have been coupled with an increased number of recalled products that are available for sale *via* the platforms. In the EU, in 2016, out of the 2 044 notifications reported by the RAPEX contributors, 244 of those involved products sold through online platforms (EC, 2017*a*).

The degree to which online platforms monitor and manage product safety on their platform depends, to a large extent, on their business model. When online platforms sell their own products and/or are intimately involved in the fulfilment process, the identification and removal of recalled products can be a quick and seamless process. When online platforms only host products from third party sellers, challenges can arise in managing the removal of a recalled product for the following reasons:

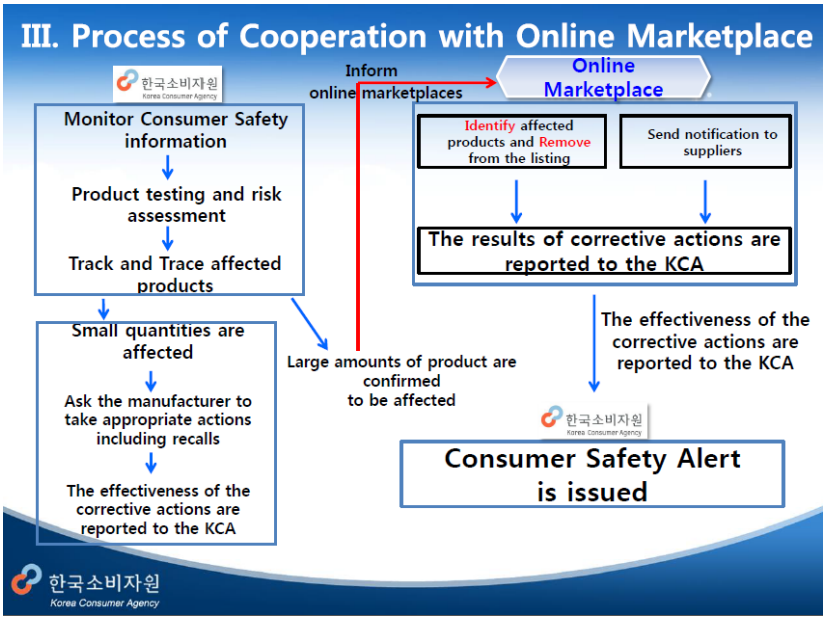
- There is no integration between the online platform and the warehousing and delivery of a product, hence there is no possession of products at any stage.
- The online platform has no control over the terms and conditions of individual products (all third party sellers must however agree to the platform's general terms and conditions).
- The online platform often has little to no knowledge of individual items available for sale (reliance on information provided by third party sellers).

Despite these challenges, many online platforms aim to provide trustworthy shopping experience for consumers, and play a key role in ensuring that unsafe products, including recalled products, are not available for sale *via* their platforms.

A growing number of platforms have established partnerships with product safety authorities worldwide to share information about recalled products and report on the removal of such products from their listings. In a number of countries, product safety authorities have cooperated with several online platforms to prevent sales of recalled products (Figure 13).

In the EU, the EC has released a *Notice on the Market Surveillance of Products Sold Online*, which notably highlights the role that is to be played by online platforms to prevent the sale of recalled products on their platform. This includes acting expeditiously to remove access to illegal content, such as unsafe or non-compliant products, when the platforms become aware of such content on their platform (EC, 2017*d*). Amazon, eBay, and Alibaba have set up a single point of contact for the authorities, and have agreed to remove unsafe products notified through the RAPEX (EC, 2017*c*). For example, in July 2018, RAPEX warnings concerning a necklace containing excessive nickel[24] and an ankle bracelet[25] containing excessive cadmium led to the withdrawal of these products from online platforms, restricting any future sales.

Figure 13. Korea Consumer Agency's cooperation with online platforms



Source: Korea Consumer Agency's presentation at OECD WPCPS' 15th meeting in November 2017, informal roundtable on product safety and online platforms.

To further enhance good practice among online platforms and other stakeholders in this area, in June 2018, the EC released the *Product Safety Pledge*[26] signed by Alibaba, Amazon, eBay and Rakuten France. The pledge, which is a voluntary commitment, outlines various requirements related to the removal of unsafe products, supplier training, consumer complaint management and the strengthening of internal product safety processes, with a biannual reporting period back to government (EC, 2018).

In the United States, in 2015, the CPSC concluded an agreement with the Alibaba Group whereby the company would take responsibility for preventing and removing recalled products from their platform and making these products unavailable to consumers located in the United States. The agreement includes the following measures (Mintz Levin, 2015):

- The establishment of a direct line enabling contacts between the US CPSC and Alibaba.
- The sharing, by the US CPSC, of a list of recalled products with Alibaba.
- The implementation of measures (such as keyword filters) that proactively block the ability of third parties using the platform to list recalled products for sale.
- The establishment of access points on Alibaba's business-to-business platforms that would direct importers of products to the United States to US safety regulations on higher risk consumer products.

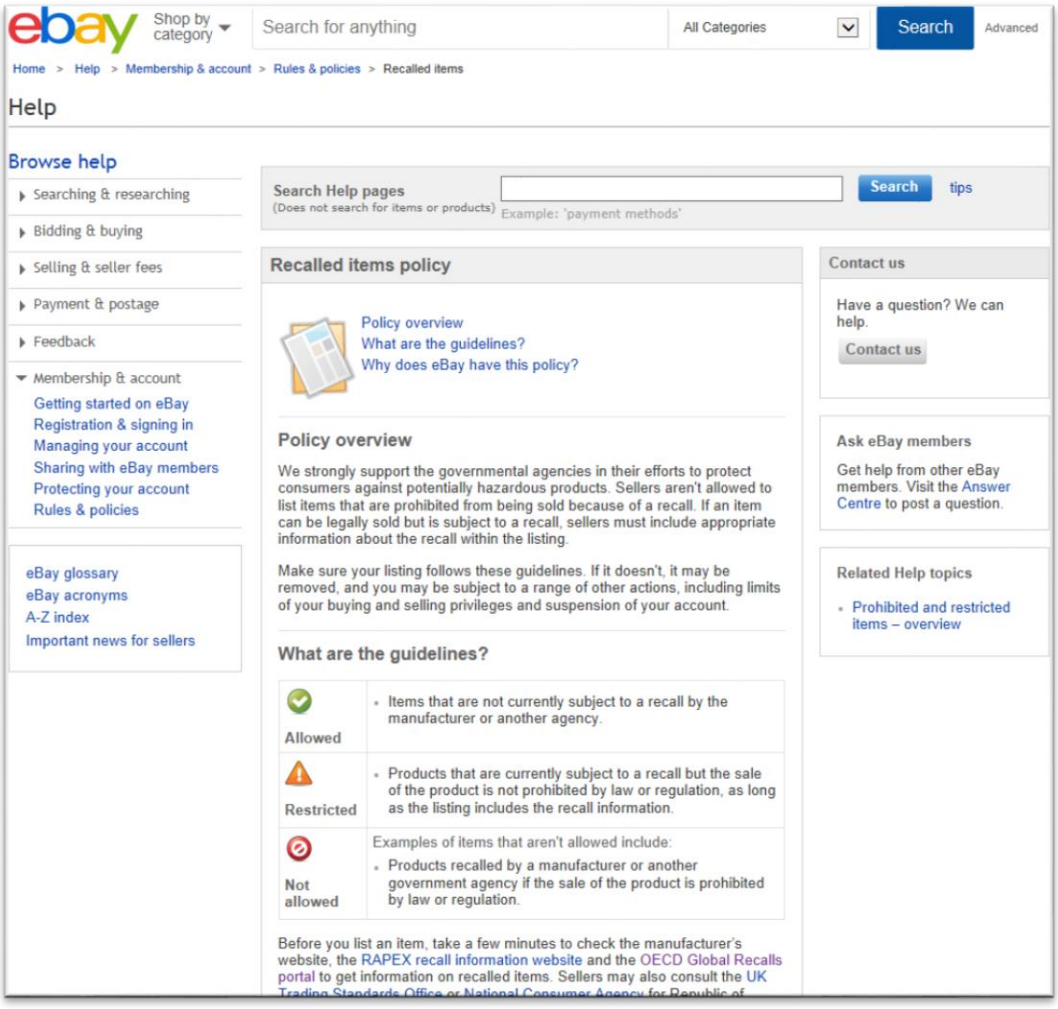
In 2015, when a defective hoverboard caused a house fire in the United States, within a month, Amazon pulled a number of hoverboard models from its platform and added hoverboards to its gated category, which requires pre-approval by Amazon before listing[27]. Amazon instructed hoverboard manufacturers to demonstrate that their products fulfilled existing safety standards for batteries and chargers. In China, one manufacturer reported that his orders fell by 50% following Amazon's new safety requirements (US-China ESRC, 2017).

In Japan, the METI established a cooperation framework with three major e-commerce and Internet auction platforms in 2012. The framework serves to strengthen compliance with product safety laws in Japan and restrict sales of consumer products that do not meet technical standards. The framework includes the following measures (METI, Japan, 2012 and 2013):

- The dissemination on the platforms of information on product safety regulations to raise users' awareness about such regulations.
- Platforms' assistance in METI's investigations to help take measures against platform users in breach of safety regulations.
- The identification of contact points enabling information sharing between METI and the platforms, as well as regular liaison meetings.

Furthermore, since September 2017, the METI has organised regular meetings with major e-commerce and Internet auction platforms for the purpose of exchanging information about online product safety, including recalled products (OECD, 2018*c*).

Figure 14. New link to the OECD's *GlobalRecalls* Portal in eBay's Rules and Policies



Source: eBay Rules and Policies for Recalled Items, at: http://pages.ebay.co.uk/help/policies/recalled.html, accessed on 6 March 2018.

In Australia, the ACCC has established processes with eBay, Alibaba, Etsy, Gumtree, and Amazon Australia for listing removals of non-compliant products upon notification by the agency. The ACCC has also gained commitments from these online platforms to participate in biannual one-on-one meetings, implement supplier education initiatives and work proactively with the agency to mitigate the risks of unsafe products sold via their platforms.

In addition to these cooperation schemes, some online platforms have put in place, on their websites, product safety prevention and education programmes for sellers and buyers, which are complemented by information on relevant product safety rules and regulations, as well as links to authorities' websites and product recall databases. In 2018, eBay added a link to the OECD's *GlobalRecalls* portal in its Rules and Policies concerning recalled items (Figure 14).

4. Consumer product recalls communications

Providing consumers with adequate and timely information about a product recall is key to removing dangerous products from the market, preventing product-related injuries, and maintaining consumer trust. This part of the report examines ways in which recall communications may be improved to enhance return rates.

4.1. Understanding consumer behaviour

Despite the growing number of product recalls worldwide, only a few studies have been developed since the 1980s to explore consumer behaviour and understand consumer reactions to product recall notices. As discussed in Section 3 of this report, the degree to which consumers react to recall notices depends on a number of factors, such as the value and lifespan of a product, ways in which consumers are contacted, the level of severity of the hazard, and the remedies offered to consumers.

According to behavioural insights research, consumers tend to be confident that products sold in physical and online shops are safe, and are generally unaware or uninterested in the product recalls system in place in their country (Lynn Faulds Wood, 2016; Venkatesan, 1981). Consumers generally do not read product safety instructions, and even when they do so, they usually fail to act upon them (US CPSC, 2003).

At the same time, many suppliers, who tend to perceive recalls as damaging to their brand and reputation, often downplay the risk in their communications to consumers, with a view to protecting their business (ACCC, 2010). Such suppliers tend to use verbose and vague language, which in turn can cause confusion amongst consumers and is likely to demotivate them to take action. Governments can play a salient role in ensuring that recall messages are clear, concise and simple (Box 2).

Box 2. Example of simplification of text in a scooter recall notice

Original content submitted by the recalling supplier to the government agency

As a result of the ongoing, stringent quality control activities we perform on the components installed on our vehicles and of our continuous research to develop better new technical solutions, and in keeping with our commitment to ensure the best ownership experience possible for the customer, we have decided that it is necessary to upgrade the frame of the vehicles in question with the procedure described as follows:

- In the case of vehicles in your stock or vehicles that have been sold but have not been ridden, a reinforcement bracket must be installed on the frame.
- In the case of vehicles that have been registered and are in use, an inspection is necessary to check the integrity of a specific area of the frame: if the inspection reveals that the frame is undamaged, a reinforcement bracket must be installed on the frame; if a crack is found in the area inspected, the frame itself must be replaced.

Revision of original content in collaboration with the government agency

The scooter frame could flex under certain conditions and subsequently cause cracking of the frame in a particular area.

Source: ACCC presentation on *Communicating more effectively with consumers* at the OECD workshop on recall effectiveness (OECD, 2018*c*).

4.1.1. Behavioural biases

As highlighted in the *OECD Consumer Policy Toolkit*[28] (OECD, 2010*b*), and recent CCP work on the use of behavioural insights in consumer policy and on improving online disclosures with behavioural insights (OECD, 2017*b*; OECD, 2018*b*), consumers' judgements and decisions are often subject to behavioural biases and heuristics that may hinder the effectiveness of information disclosures. Such biases, which may affect consumer responses to recall notices, include: information overload, the endowment effect, anchoring, framing, overconfidence, time inconsistency/myopia, as well as the impact of social and cultural norms.

Behavioural research applied to product recalls developed by the US CPSC and the UK's Department for Business, Energy and Industrial Strategy (BEIS) highlights similar barriers to action which can influence consumers to remain at status-quo and not engage with recalls that impact them (Box 3).

Box 3. Consumer behavioural biases applied to product recalls

Information overload: If recalls contain too much information or consumers feel overwhelmed with information on recalls, they may disengage and not take action, especially if they are also time poor. With the growing number of product recalls in countries, consumers may suffer from "recall information" *fatigue*, and may not pay attention to the recall alerts that are relevant to them.

Framing effects: Consumers are influenced by how information is presented. Presenting an option in a certain way may induce consumers to evaluate the choice from a particular reference point. For example, consumers are less likely to respond to voluntary recalls if the potential hazards are not clearly stated. They are also less likely to follow instructions, including the steps they should follow to return the product, if such instructions are presented in a complex and lengthy message.

Inertia: With an inherent fear of the unknown, when consumers face complex products or a bewildering array of choices, they may ignore possible choices or choose not to choose. Consumers may also rely on simple "rules of thumb" to avoid change or are guided by the values, actions and expectations of a particular society of group.

Endowment effect: Consumers often demand much more to give up an object than they would be willing to pay to acquire it. A consumer's value of a product increases when it becomes part of their endowment, so if the perceived inconvenience associated with returning a recalled product outweighs the compensation (i.e. return, refund or repair), consumers are less likely to return it. This is because naturally humans tend to be loss averse, even if it is in relation to a recalled product.

Over-optimism: Consumers tend to think that they are more likely to experience an outcome that is better than the average expected outcome. This may cause them to miss or ignore warnings, or negative messages. Consumers may also be more inclined to keep using unsafe products, particularly if these products have been used for a long time without injury caused to them or to someone they know. This particular barrier is evident in the case of the Takata airbag recall.

Time inconsistency: Consumers may make choices that are not consistent across time periods due to conflicts between short-term urges and long-term interests.

Source: US CPSC, 2003; BEIS presentation on *Communicating more effectively with consumers*, OECD workshop on recall effectiveness (OECD, 2018*c*).

4.1.2. Addressing consumer behavioural biases

To assist businesses and governments in assessing whether their communication strategies are effective during a recall, the UK Government has outlined a set of behavioural concepts in its MINDSPACE Report[29] (Figure 15).

Figure 15. Mindspace mnemonic – checklist of influences to use when making policy

Messenger	we are heavily influenced by who communicates information
Incentives	our responses to incentives are shaped by predictable mental shortcuts such as strongly avoiding losses
Norms	we are strongly influenced by what others do
Defaults	we 'go with the flow' of pre-set options
Salience	our attention is drawn to what is novel and seems relevant to us
Priming	our acts are often influenced by sub-conscious cues
Affect	our emotional associations can powerfully shape our actions
Commitments	we seek to be consistent with our public promises, and reciprocate acts
Ego	we act in ways that make us feel better about ourselves

Source: Institute for Government, 2010.

Providing incentives during a recall is one tool that can encourage consumers to return recalled products and help them feel compensated for the effort of participating in a recall (OECD, 2018*c*). There are various examples of companies offering free shipping and coupons/gift cards in addition to a refund, repair and/or replacement. In some instances, the availability of such incentives has been the result of a negotiation between a local government agency and a recalling company, as illustrated in Box 4.

Box 4. Examples of incentives used in recall notices

Australia

In June 2018, the retail store, Target Australia, recalled a pressure cooker and offered AUD 10 gift card in addition to a full refund (ACCC, 2018).

Canada & United States

In March 2018, Alstyle recalled infant body suits in both countries and offered free shipping, along with USD 10 gift card for every returned body suit (individual body suits were sold below USD 3) (Health Canada, 2018).

United States

In February 2018, when Tiffany & Co. recalled crystal mugs, it offered free shipping to those consumers unable to return the product in-store and provided a USD 100 gift card in addition to a full refund (US CPSC, 2018).

4.1.3. New product recall- specific behavioural insights research

At the WPCPS' 2017 informal roundtable, delegations noted that more behavioural insights research would need to be conducted in the field of product recalls to better understand the steps required for consumers to notice, comprehend, evaluate, and act on recall communications (and see US CPSC, 2018*b*). Since the meeting, Australia, Canada, Costa Rica, the United Kingdom, the United States, and the European Commission indicated that such research would be developed in their respective jurisdiction between mid-2018 and end 2020, and would include a mix of qualitative focus groups, behavioural insight trials, large-scale quantitative surveys, literature reviews, and stakeholder consultations. In the United Kingdom, the research, to be conducted by the government's Working Group on Product Recalls, may consist of: i) testing whether the content of recall messages should be adapted to certain product categories, lifespan, or pricing points; and/or ii) identifying ways to increase consumer awareness of product safety and recalls via nudges, by, for example, encouraging consumers to register their products at points of sale (UK BEIS, 2017).

4.2. Content of recall notices

In some countries, such as Australia, Iceland, and Korea, the main elements that should be included in a recall notice are prescribed by law. In these and other countries, such as the United Kingdom, template notices and guidelines have been released by the authorities addressing product safety issues to encourage and help recalling companies to produce effective messages to consumers. Under such guidelines, voluntary recall notices should include information enabling consumers to identify (see Figure 16 for a sample template provided by the ACCC):

- the recalling company
- the recalled product, including serial and model numbers or other unique identification scheme. A picture of the product should also be attached
- the product defect, and/or safety risk, and/or hazard, using visuals, such as a pictorial representation of the hazard (using for example a hazard symbol), where available

- the types of remedies available to consumers, such as a product repair, replacement, and/or a refund
- a few steps that consumers should follow to quickly respond to the recall notice (this would include, for example, a message inviting consumers to book a convenient time to return a product to the nearest store and indicating that the product will be repaired, or replaced, at no cost)
- how to contact the company (such as by phone or e-mail).

Figure 16. ACCC's Recall Advertisement Templates

Source: ACCC, 2015.

The title of the notice should give consumers a sense of urgency and severity. According to the research from the UK's Working Group on Product Recalls, words with the highest perceived effectiveness include “Urgent”, “Recall alert” and “Danger”. By contrast, qualifiers such as “discretionary” and “compulsory” tend to be less well understood, and terms such as “voluntary recall” may introduce a decreased sense of danger in the continued use of the product and may mislead consumers into believing that returning the product is voluntary. In addition, the inclusion of a pictorial representation of the risk resulted in greater reported distress.

The above language has been noted as a crucial factor for motivating consumers. In the case of the Takata airbag recall in Australia, consumer interviews revealed that many consumers did not take action until the recall changed from being voluntary to mandatory (A Current Affair, 2018).

As revealed by the analysis of recent product recall cases (Box 5), and consistent with existing behavioural insights literature, recall notices that include text that is concise, contains plain and easy-to-understand language, and avoids scientific or technical jargon, hold greater chances of attracting consumer attention.

Box 5. Some lessons learnt from the "Takata airbag" recall in Australia

- In 2017, the ACCC requested the recalling companies to provide information about how the recall was communicated to consumers, and followed up.
- The ACCC found that the low priority given by some of the recalling car manufacturers to reaching consumers, and the differing characterisation of a clear risk of injury or death, were sources of concern.
- In their communications with consumers, some suppliers used euphemisms and were inclined to downplay the potential risks to minimise reputational damage.
- While a clear and short recall message from one company triggered a 72% reaction rate, another company's lengthy message resulted in a 30% success rate.
- On 28 February 2018, the Assistant Minister to the Treasurer issued a compulsory recall for all vehicles with defective Takata airbags, based on evidence provided by the ACCC that:
  - a reasonably foreseeable use of vehicles with defective Takata airbags may cause injury to drivers and/or passenger, and
  - one or more suppliers of vehicles with defective Takata airbags had not taken satisfactory action to prevent those vehicles causing injury to drivers and/or passengers.

Source: Treasury, 2018; and ACCC presentation at the 2017 WPCPS informal roundtable on product recalls.

Behavioural "nudges" may also be used in recall notices to motivate consumer reactions. Following are examples of such "nudges":

- References to social norms: Text highlighting for example that the majority of people engage in or approve the same behaviour.
- Reciprocity: Providing consumer with an unexpected gift to induce compliance with the notice.
- Personalisation: To attract the attention of the recipient by using their name in the communication tool used.
- Simplification: Making the recall easy to understand and allowing consumers a simple option for following up on the recall.

4.3. Communication channels and tools

4.3.1. Multi-channel communication strategy

Use of multi-channel communication helps to facilitate a wider reach of recall messages to consumers. For example, Health Canada recommends recalling companies to always favour a multi-channel communication strategy to increase chances to attract consumers' attention and enhance awareness (Table 2). Where possible, information should be communicated through a company's website, social media (including blogs), personalised e-mails and letters, phone calls, as well as alerts through apps and connected devices, such as smart home personal assistants, connected cars and mobile phones. In its 2003 report on recalls effectiveness, the US CPSC refers to a recall case where 57% of the consumers who had heard about the recall through media notices and advertising, reported checking their

product to see whether it was included in the recall. In comparison, among those who first heard from the same sources but also received a recall notice in the mail, 74% checked to see if their product was included in the recall (US CPSC, 2003).

Table 2. Health Canada's examples of distribution methods for recall notices

Method	Examples
Websites	Publish on your company website
	Share the consumer recall notice with Health Canada so the information can be published on the Healthy Canadians Recall and Safety Alert Database
Social Media Platforms	Twitter Facebook Google+ YouTube Pinterest Flickr
	Blogger Networks
	Others as applicable
Media/Marketing Outlets	Company media release, for example on Canada Newswire Service or other media clearinghouse
	Video news release
	National news conferences
	Paid notices in newspapers, magazines, radio, television or online
	Paid notices in product catalogues, newsletters and other marketing materials
Direct Notice	Mail outs to addresses or telephone calls to numbers identified through registration cards, sales records, catalogue order, loyalty program, service inquiry lists, or other means
	Messages on credit card statements and bills
	Listserv e-mails and text messages to consumers
	Purchase and use of mailing lists for populations likely to use the affected product
	Notices included with product replacement parts/accessories
Posters	Display signs or point-of-sale posters in retail stores that sold the product
	Display at locations where users are likely to visit, such as stores, medical clinics, paediatrician's offices, child care centres, repair shops, equipment rental locations and others
Other	Notices to repair/parts shops
	Service bulletins
	Notices to child-care centres
	Notices to second-hand product retailers

Source: Health Canada, 2017.

4.3.2. Direct communication

Some studies have shown that direct notifications sent to those consumers who own a recalled product are the most effective way to inspire action. This implies that the contact details of the consumers concerned are known to the supplier, which is generally the case when, for example, consumers have provided such information through loyalty programmes, product registration schemes, or *via* e-commerce purchases. In a 2002 report, the US NHTSA pointed to a 24% increase in the return rate for car seat registration cards

since 1993, and a corresponding 7% increase in the average effectiveness rate for child safety seat recalls (US NHTSA, 2002).

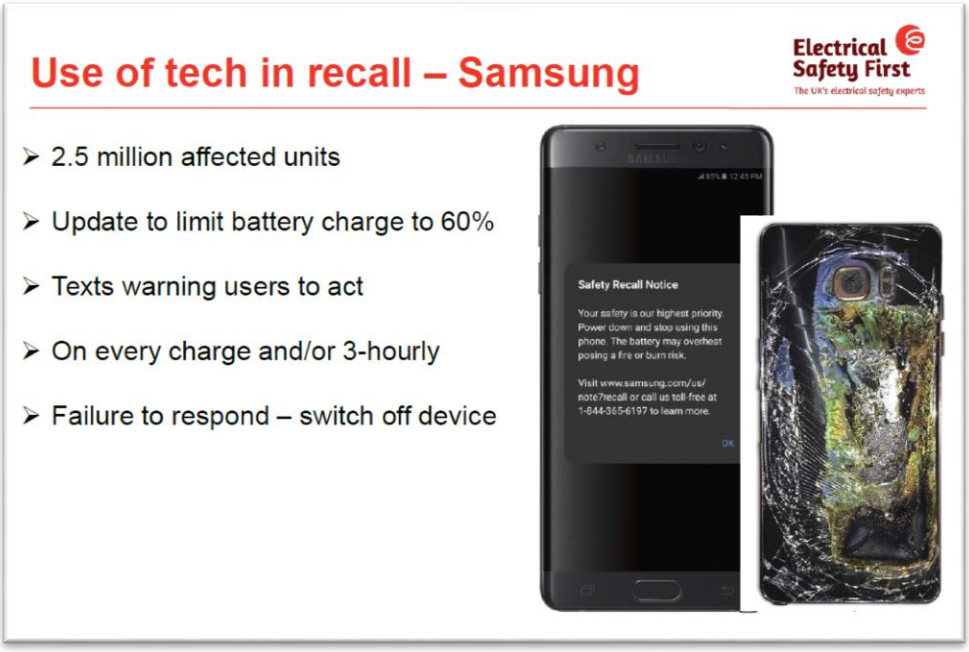
The UK Government's Code of Practice on product recalls and safety[30] also recommends use of direct communication with consumers to help increase recalls' return rates. In many instances, however, consumers may not be contacted directly. This may be the case for example when consumers have paid cash, their contact details have changed, or they have purchased a recalled product on the second-hand market.

At the OECD workshop on recall effectiveness, the UK BEIS representative noted the example of a tumble dryer which had been manufactured over 11 years prior to the recall announcement, and impacted 5.3 million units presenting fire risks. Despite concerted and sustained efforts over two years, the recalling company, which lacked consumer data, was able to fix as much as 37% of the dryers. By contrast, in the case of a recall of a heating element where 99% of customer data had been captured at points of sale, the recalling company was able to establish contact with 84% of customers within five months (OECD, 2018*c*).

4.3.3. Social media and other digital communication tools

In recent years, a number of recalling companies have been active on social media, or have used technology, to alert consumers about a recall. In the midst of its 2014 recall of 1.6 million cars, General Motors used social media to stay connected with unsatisfied consumers. Likewise, Ikea actively communicates with consumers through social media and recently used it to share updates about its recall of the MALM dressers (National Law Review, 2018). In 2016, Samsung sent text messages directly to Galaxy Note7 screens to alert consumers about the need to return the phones (Figure 17).

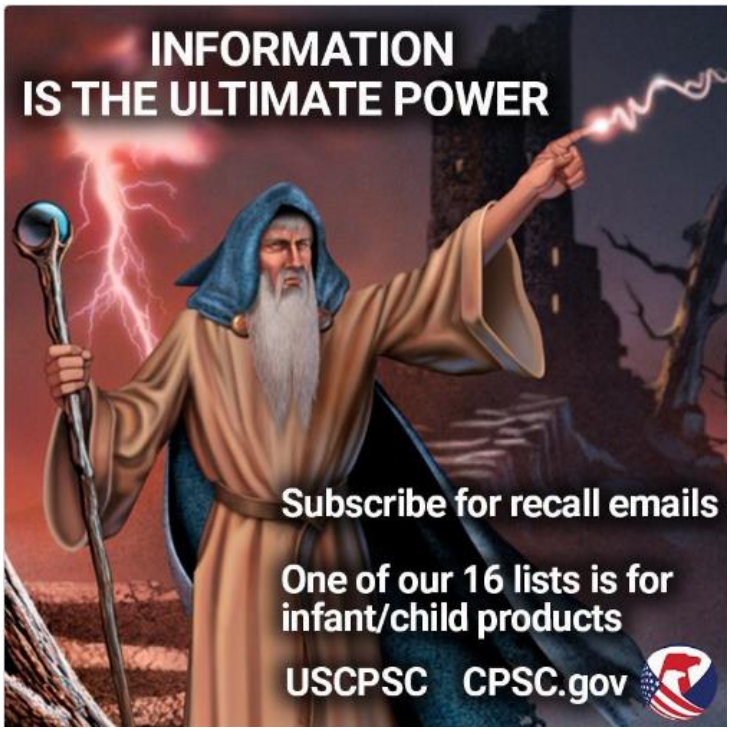
Figure 17. Samsung's use of text messages to communicate about its Galaxy Note7 recall



Source: Electrical Safety First PPT presentation, 26 October 2016, at: https://www.electricalsafetyfirst.org.uk/mediafile/100785537/M-Allen.pdf.

In addition, a number of regulators today engage in alerting consumers about product recalls, often when large-scale recalls, and/or high-risk products presenting serious dangers to consumers are involved. Some regulators use social media to publish their own official notifications, which may be combined with a press release. The US CPSC[31] and the METI in Japan[32], have, for example, set up a Facebook page where they inform consumers about product recalls. Some agencies also encourage consumers to subscribe to a recall e-mail alert[33] *via* their website (Figure 18).

Figure 18. US CPSC's tweet inviting consumers to subscribe for recall e-mails on its website.



Source: US CPSC tweet, at: https://twitter.com/USCPSC/status/966714361132863489.

4.3.4. Influencers

There is also evidence that use of influencers (such as high profile celebrities) can assist in increasing consumer engagement and can help break down the barriers to action. As consumers are influenced by how messages are presented, influencers can play a vital role in being the "presenters" of recall information to consumers. In social media alone, visitors driven to a website by influencers from this platform are four times more likely to engage with the message than those visiting from other communication sources such as advertising (Hall, 2010).

As part of its recall communications strategy, Health Canada regularly engages with influencers via tagging relevant influencers on social media in their communication. For example, in 2015, tagging of a popular hockey show on Twitter as part of a hockey mask recall tweet, raised the visibility of the recall with a targeted consumer group that otherwise may have not seen the recall via other sources. In Costa Rica, the government has noted that the use of influencers can increase consumer engagement, particularly for reaching out to young consumers. This was the case in 2015 during the recall of a Beats Pill XL Speaker[34], which achieved a 60% return rate in the country (OECD, 2018*c*).

Annex A. Questionnaire on Measuring and Maximising the Impact of Product Recalls at Domestic and Global Levels

I. Measuring recalls' effectiveness

- Does your agency/organisation measure recalls' effectiveness? If so, how often?
- How do you define "effectiveness"?
- What methodology do you use and what challenges have you encountered?
- What is the average response rate to the product recall? Please identify product categories (e.g. toys or automobiles) that tend to trigger the highest and lowest response rates.
- Which criteria (e.g. product risk level, lifespan, price, and/or injury data) are used by your agency/organisation to prioritise monitoring actions?
- If consumers do not to take advantage of a recall remedy but instead stop using a recalled product or throw it away, is there a way to measure this?
- How does your agency/organisation address the challenge of monitoring and enhancing the effectiveness of a recall over time? What action(s) can it take to do so? What are the main obstacles encountered?
- Does product safety law in your jurisdiction require businesses to notify and report on the status of a recall to your agency/organisation?
- Please provide any recent examples of actions by your agency/organisation to co-operate with other domestic agencies and/or foreign counterparts to monitor the effectiveness of a recall.

II. Enhancing consumer reactions to recall notices

- What factors make consumers more likely respond to a product recall? Are, for example, consumers more likely to act on recalls involving expensive products and/or products with long lifespans?
- What key information should be included in recall notices to help increase correction rates?
- What are the most effective communication tools (e.g. news releases, email, phone call, social media) for alerting consumers to a product recall?
- Are there any legal requirements in your jurisdiction on:
  - The type of information that should be included in a recall notice?
  - How a company should advertise or communicate a recall?
- What role should the WP play to help enhance consumer reactions to product recalls at domestic and global levels? Should, for example, guidance on ways to frame and communicate recall information to consumers be developed by the WP? Other?
- Please provide any additional information that would further inform the WP's work in this area.

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Notes

[1] The following delegations provided responses to the product recall effectiveness questionnaire: Australia, Canada, France, Japan, Korea, Costa Rica, Chile, and Switzerland.

[2] A summary of discussion at the workshop is available here: https://doi.org/10.1787/23074957.

[3] The scope of the 1981 OECD Recommendation on product recalls is limited to non-food products.

[4] The portal is available at: https://globalrecalls.oecd.org.

[5] The RAPEX contributors include the authorities of the 28 EU Member States as well as Iceland, Liechtenstein, and Norway. Under the scheme, the European Commission has a coordinating role and ensures that the notifications submitted by the authorities comply with the requirements of the EU's General Product Safety Directive before they are validated and published on the database (at: https://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/alerts/repository/content/pages/rapex/index_en.htm).

[6] The database (at: https://globalrecalls.oecd.org), which can be browsed by governments, businesses and consumers alike, brings together publicly available information on mandatory and voluntary recalls of non-food products issued by governments worldwide.

[7] See: http://ec.europa.eu/trade/policy/countries-and-regions/countries/china/index_en.htm.

[8] The issue has been discussed at a panel addressing Safety, Responsibility and Liability at an OECD conference on artificial intelligence held on 26-27 October 2017 (see: www.oecd.org/going digital/ai-intelligent-machines-smart-policies/conference-agenda/). It has also been discussed at a public hearing on the IoT and product safety organised in May 2018 by the US CPSC (see: www.youtube.com/watch?v=7RdbpJ_eD98). It will be further explored at a conference on the IoT, artificial intelligence and product safety that to be jointly organised by the OECD and the European Commission in Brussels on 14 November 2018.

[9] A blockchain is a tamper-proof database that is capable of storing any type of data and relies on a distributed peer-to-peer (P2P) infrastructure network for the storage and management of data and on a distributed network of peers to maintain and secure a distributed ledger. As such, it operates independently of any central authority or intermediary operator (OECD, 2017*a*).

[10] IBM's Food Trust systems is a collaboration between producers and retailers to assist with the identification of contamination sources through the use of blockchain: www.ibm.com/blockchain/solutions/food-trust.

[11] See: www.registermyappliance.org.uk.

[12] In October 2016, the UK government created a Working Group on Product Safety and Recalls to explore ways to improve product safety and recall effectiveness, following a number of fires involving large white goods in UK consumers' homes.

[13] Over 4 000 km of sub-standard electrical cable was imported into Australia and installed in thousands of homes and businesses. A recall of the cable was launched in 2013 due to the risk of the cable becoming brittle within six to seven years in high heat, thus increasing the risk of electrocution and fire (ACCC, 2015*a*). In 2017, almost half of the dangerous cabling remained in Australian homes (The Sydney Morning Herald, 2017).

[14] Denmark indicates that such figures are indicative guidelines, which are implemented and adapted on a case-by-case basis.

[15] The information requested by the ACCC may include the status of a recall, communication plans with supply chain actors and consumers, and other data related to the recall and its remedies.

[16] Review of the mandatory standards for toys: https://consultation.accc.gov.au/product-safety/review-of-mandatory-safety-standards-for-childrens/ (The outcome of the review is currently pending).

[17] At: www.productsafety.gov.au.

[18] Post the introduction of the compulsory recall in February 2018, the monitoring and assessment process has been carried out by the ACCC only (Treasury, Australia, 2018).

[19] Toy recall notice in Australia: www.productsafety.gov.au/recall/kaleidoscope-australasia-pty-ltd-le-toy-van-noahs-shape-sorter.

[20] New Zealand's toy recall notice is available at: www.recalls.govt.nz/recall/le-toy-van-noahs-shape-sorter-white-doves.

[21] At: www.aseanconsumer.org/accp/index.php?r=portal/article&id=3.

[22] At: www.sites.oas.org/rcss/EN/Pages/alerts/alertsall.aspx.

[23] More information about GS1 is available at: www.gs1.org.

[24] Necklace recall: https://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/alerts/?event=viewProduct&reference=A12/1125/18.

[25] Ankle bracelet recall: https://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/alerts/?event=viewProduct&reference=A12/1124/18.

[26] At: https://ec.europa.eu/info/sites/info/files/voluntary_commitment_document_4signatures3-web.pdf.

[27] Information on Amazon gated products: https://sellercentral.amazon.com/gp/help/external/200333160?language=en-US&ref=mpbc_14113001_cont_200333160.

[28] The behavioural economics section is available from pages 42-47 of the 2010 *Consumer Policy Toolkit*: www.oecd.org/sti/consumer/consumer-policy-toolkit-9789264079663-en.htm.

[29] MINDSPACE is a report from the UK Institute of Government which explores the application of behavioural change theory to public policy (Institute for Government, 2010).

[30] The UK's Government's Code of Practice on product recalls and safety is available on the British Standards Institution's website, at: https://shop.bsigrou.com/ProductDetail/?pid=000000000030359024&_ga=2.148032945.784134925.1528904681-1229503735.1527752967

[31] See: https://www.facebook.com/USCPSC/.

[32] See: www.meti.go.jp/english/press/2015/0717_01.html.

[33] The ACCC's product recalls website (www.productsafety.gov.au/recalls) accounts over 15 000 suppliers and consumers receiving emails and RSS feeds about the latest product recalls.

[34] The speaker was recalled due to overheating and fire risk (see: www.apple.com/support/beats-pillxl-recall).