



NEW CHANNELS AND METHODS OF ILLEGAL PYROTECHNIC DISTRIBUTION

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Abstract. The article examines contemporary challenges and opportunities related to the circulation of pyrotechnic products in the era of digitalization. It analyzes the role of the Internet and online platforms—including social media, crypto markets, and encrypted messaging services—in facilitating the illicit trade in pyrotechnics. Particular attention is paid to the use by criminal groups of anonymization technologies, “cryptophones,” VPN services, and cryptocurrencies, which significantly complicate law enforcement efforts. The study also highlights regulatory challenges, including the absence of specialized legislation in many countries and discrepancies among national legal systems that create opportunities for abuse.

At the same time, the article emphasizes emerging tools to counter the illicit trafficking of pyrotechnic products, such as international cooperation, collaboration between public authorities and e-commerce platforms, the application of modern investigative techniques, and preventive online awareness campaigns. It concludes that a comprehensive and coordinated approach involving states, international organizations, and the private sector is necessary to minimize risks and enhance public safety.

Keywords: illicit trade in pyrotechnic products, Internet, social media, crypto markets, darknet, cryptophones, encryption, e-commerce, international cooperation, law enforcement agencies, counterfeit products, digital security, legal regulation.

(Introduction). The digital era presents new challenges to the international community while simultaneously creating additional opportunities to regulate the circulation of pyrotechnic products. The rapidly evolving landscape of illegal online trade in pyrotechnics generates new difficulties. At the same time, the use of online platforms offers prospects for preventing illegal activities, raising public awareness of associated risks, and strengthening public safety measures.

The Internet, particularly social media, has significantly expanded access to pyrotechnic products on the illicit market. Criminal groups actively use electronic platforms for their illegal distribution. The application of encryption and advanced technologies considerably complicates the work of law enforcement agencies in detecting and suppressing such activities, as well as in bringing offenders to justice.

It is important to emphasize that offenders skillfully exploit legislative loopholes and differences between national legal systems.

Online resources can both facilitate the achievement of established objectives and hinder their implementation. Although the role of the Internet in the illegal trade of pyrotechnic products and in sourcing chemical substances and equipment for their unlawful production is not yet decisive in transforming the entire supply chain, this sphere continues to evolve and may become more significant in the future. In this regard, international cooperation is of crucial importance for effectively countering this trend.

Law enforcement agencies remain at the forefront of efforts to prevent the misuse of online services and legitimate e-commerce platforms for the illegal trade of pyrotechnic products. Capacity-building initiatives and information exchange regarding suspicious online

listings have contributed to the seizure of illegal goods and the dismantling of criminal networks.

In the current year, as a result of operational measures and customs inspections, pyrotechnic products were seized in 119 identified cases, totaling more than 7.25 million units with an overall value exceeding 2.3 billion soums. Criminal proceedings were initiated in 10 cases, while administrative measures were applied in 80 instances. [1]

(Literature review). The Internet enables law enforcement agencies to reach a much broader audience when issuing warnings about the presence of hazardous substances in pyrotechnic products. Disseminating such information can help prevent accidents and save lives.

At the same time, the Internet may also be used for unlawful purposes, including the dissemination of information on how to manufacture pyrotechnic products. There have been cases where users posted methods for extracting pyrotechnic precursors [2] from legally sold items.

In a number of countries, including the United States, the Netherlands, Germany, the United Kingdom, and France, criminal groups manufacture so-called combined pyrotechnic devices, which are subsequently used in the commission of serious crimes such as attempted murder, assaults, burglaries, threats, arson, and terrorist acts. Upon detonation, such devices can produce an explosive effect comparable in destructive force to powerful explosives.

Pyrotechnic precursors are chemical components used in the production of pyrotechnic compositions, such as fireworks and signaling devices. The basic ingredients include potassium nitrate, sulfur, and charcoal. Their combination ensures combustion and oxidation processes, forming short-acting energetic mixtures [3]. The circulation of certain chemicals, including those used in pyrotechnics, is subject to strict regulatory control.

(Research methodology). Nevertheless, the Internet also creates significant challenges in controlling the circulation of pyrotechnic products. By using social media and other digital platforms to promote their goods, pyrotechnic vendors can reach a broad international audience. The vast volume of content published on these platforms greatly complicates monitoring efforts by law enforcement agencies, even when digital traces are left behind.

Initiating cases and bringing offenders to justice for illegal online trade in pyrotechnic products is a complex and multi-stage process. Offenders often relocate their activities to jurisdictions with less active law enforcement practices or more lenient penalties, and may operate from countries where extradition is not enforced.

In response to existing threats, law enforcement agencies have begun effectively implementing modern investigative techniques. These include posting undercover advertisements for the sale of pyrotechnic products and conducting covert operations to gather intelligence on potential buyers and sellers.

In Europe, organized criminal groups actively utilize internet technologies to facilitate the illegal trade of pyrotechnic products. In particular, they use modified mobile devices with enhanced encryption features, commonly referred to as “crypto phones,” which significantly complicate the detection and suppression of unlawful activities.

A **crypto phone** is a mobile device with enhanced data transmission security features. These features protect users from being intercepted or eavesdropped on by third parties. The core component of any crypto phone is a cryptographic chip that encrypts and decrypts transmitted signals. Externally, a crypto phone may look like a standard smartphone or feature phone.

Although the term “crypto phone” is also used for devices designed to manage digital assets, in this context it refers exclusively to phones with advanced secure communication capabilities. [4].

Although criminals believe their communications are secure, law enforcement agencies have successfully decrypted their conversations. Since 2021, several individuals of significant operational interest have been apprehended.

For instance, in France, the National Gendarmerie collected over 120 million text messages from 60,000 mobile devices. Analyzing this data enabled authorities to trace connections and operations spanning more than 100 countries[5].

Crypto markets are online platforms located in the deep web (darknet) that allow users to browse anonymously, use encryption to secure messages, and make payments in cryptocurrency [6]. According to buyers, they turn to these markets because they provide a safer way to purchase various types of pyrotechnic products. Both sellers and buyers consider transactions on crypto markets to carry a lower risk of fraud, physical violence, or threats compared to street-level dealings. Crypto markets primarily serve national markets, and buyers often have the option to collect products without meeting the seller in person. Despite several high-profile arrests of site administrators, crypto markets have proven resilient, although their existence is often temporary.

(Analysis and results). Small-scale sellers use mainstream social media platforms as local marketplaces to sell prohibited pyrotechnic products and explosives. Precise information on the scale and prevalence of this practice across countries is lacking. However, it is clear that pyrotechnics-related content is easily accessible to children and adolescents.

The process of acquiring pyrotechnic products via social media often begins with searching hashtags or browsing posts from users advertising these items. Using instant messaging apps with end-to-end encryption, self-destructing messages, and virtual private networks (VPNs), sellers can quickly connect with local buyers and, in some cases, even offer home delivery of prohibited products. The increasing localization of sales, combined with greater accessibility, may have a more significant long-term impact than other internet-based supply models.

In recent years, global efforts by pyrotechnic-producing countries — including the **United States, China, India, Brazil, and EU** member states — have fostered closer cooperation between governments and e-commerce companies to prevent the use of their platforms for the illegal sale of pyrotechnics and new combined devices.

As part of this collaboration, authorities monitor listings posted by suspicious sellers and track inquiries from potential buyers on major legal online marketplaces. To support effective cooperation between public authorities and the private sector, it is necessary to develop guidelines with practical recommendations and user-friendly checklists aimed at protecting the most vulnerable sectors from attempts to facilitate illegal online trade in pyrotechnic products. The most vulnerable sectors include industrial production, marketing, logistics, and internet services.

In **Latin America**, employees of a major e-commerce company identified several suspicious listings for pyrotechnic products, which enabled them to trace and apprehend the online seller. Conducting such investigations typically requires substantial resources. In many cases, platforms simply remove the suspicious listings, usually within 24 hours of receiving a relevant report.

Online stores are among the most common sources for searching information about pyrotechnic products. Illegal online sellers, trading items of unknown origin and selling them directly to consumers without safety precautions, pose a significant threat to public safety.

According to recent studies, two-thirds of countries worldwide lack legislation regulating the sale of pyrotechnics online. Except in a few countries where advertising pyrotechnic products is prohibited, there is no way to ensure the quality of products purchased on the internet. Consumers have no means to verify whether the pyrotechnic products they buy are counterfeit, uncertified, or even prohibited. Experts estimate that about half of all pyrotechnic items purchased on illegal websites are counterfeit.

In the Republic of Uzbekistan, in 2022, 7,435,000 counterfeit pyrotechnic products were seized, with a total value of nearly 5.5 billion soums, representing a 62% increase compared to the same period in 2021. [7].

(Conclusion/Recommendations). In this context, government authorities are encouraged to utilize the full range of developed tools and programs as part of efforts to combat the illegal online trade of pyrotechnic products.

To prevent the use of pyrotechnics, particularly among youth, it is recommended to conduct awareness and prevention campaigns on social media. The global nature of online pyrotechnics distribution makes joint efforts to identify emerging threats and develop effective countermeasures increasingly important.

Successfully addressing constantly evolving challenges requires strengthening cooperation among international organizations, national governments, regulatory authorities, and private sector companies operating in relevant fields.

Therefore, effectively countering the illegal trade of pyrotechnic products online demands a comprehensive approach that combines legal regulation, technological monitoring tools, international collaboration, and public awareness initiatives. Only a coordinated effort between governments, the private sector, and international institutions can ensure sustainable oversight of the evolving digital channels of illicit trade.

In this context, the following measures are proposed:

1. Development of specialized legislation for online pyrotechnic trade. Adopt separate regulations governing online sales of pyrotechnic products, including mandatory seller identification, age verification for buyers, and licensing of online pyrotechnic stores. Two-thirds of countries currently lack regulations for online pyrotechnic sales, creating a legal vacuum exploited by criminal groups. Standardizing requirements will reduce the number of illegal sellers and increase marketplace accountability.

2. Mandatory seller verification on online platforms. Establish the obligation for e-commerce platforms to verify pyrotechnic sellers through KYC procedures, including confirming licenses and the origin of goods. Most counterfeit products are sold via anonymous accounts. Stricter registration requirements will decrease illegal online stores and the volume of counterfeit products.

3. Creation of an international data-sharing system. Develop a cross-border digital platform for sharing information on suspicious listings, crypto markets, schemes, and new combined pyrotechnic precursors. Criminal networks operate transnationally and exploit jurisdictional differences. Data exchange will help identify cross-border supply channels and prevent the relocation of illegal activities to countries with weaker controls.

4. Use of artificial intelligence (AI) technologies for content monitoring. Implement automated AI-based monitoring systems to detect prohibited listings, hashtags, and covert pyrotechnics advertising on social media. The vast volume of online content makes manual monitoring inefficient. Machine learning algorithms can identify keywords, visual elements, and behavioral patterns typical of illegal trade.

5. Expansion of controlled purchases and digital investigative operations. Legally authorize online operational measures, including controlled purchases, fake accounts, and digital undercover work. Experience shows that these methods effectively identify criminal networks. Institutionalizing such procedures will enhance investigation efficiency and ensure the admissibility of evidence in court.

6. Strengthening control over chemical precursors. Expand the list of controlled chemicals used in pyrotechnic production and implement an electronic tracking system. Illegal manufacturing often begins with legally purchased components. Digital traceability will allow authorities to detect suspicious procurement and prevent unlawful production.

7. Increasing marketplace accountability. Introduce administrative responsibility for platforms that fail to promptly remove illegal listings or lack filtering mechanisms. In most cases, listings are removed only after government complaints. Mandatory proactive control will create economic incentives for platforms to invest in monitoring systems.

8. Conducting preventive digital campaigns targeting youth. Organize regular social media campaigns to raise awareness of the risks of illegal pyrotechnics, involving bloggers and opinion leaders. Children and adolescents can easily access such content. Prevention reduces demand, which is a key element in combating illegal trade.

9. Specialized personnel training. Include modules in law enforcement training programs on investigating darknet crimes, working with cryptocurrencies, and analyzing encrypted communications. The use of crypto phones, VPNs, and crypto markets requires specialized skills. Enhancing digital competence among personnel will improve crime detection rates.

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