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THE USAGE OF ELECTROMAGNETIC RADIATIONS IN CUSTOMS

Использование электромагнитных излучений в таможене

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Nowadays there is a tendency to illegal migration and illegal movement of goods flows across Customs borders. In these conditions the need to determine some physical characteristics of both goods and their documents in order to suppress violation of customs legislation is increasing.

For the purposes of their prompt detection, technical means of Customs control based on the method of recognition in electromagnetic rays are used.

Electromagnetic waves, depending on their length, are divided into several types; the most commonly used in customs work are infrared radiation, ultraviolet radiation, X-ray radiation.

Infrared (IR) radiation has properties of visible light (propagates rectilinearly, reflects, refracts like visible light), and the properties of ultrashort radio waves (it can pass through some materials that are opaque to visible radiation). And it is worth noticing that any heated body emits electromagnetic waves, mainly in the infrared range (up to 70–80%).

Sources of infrared radiation are incandescent lamps with a tungsten filament, gas discharge lamps, special LEDs and lasers. IR receivers are documents

that use a substance as a sensitive element that changes temperature or creates amperage under the influence of radiation in the infrared range.

The essence of using this type of radiation is based on the fact that infrared rays are reflected and absorbed in different quantitative ratios than the rays of the visible area. So, paints based on mineral components (aniline dyes) are transparent to infrared rays, in contrast to paints based on graphite and metal powders.

The property of susceptibility to infrared rays in Customs is used to verify the authenticity of documents. This allows Customs officers to detect supplements and additional drawings, read under the spots covering the text if they are made by different paints in "transparency" for IR rays. During examining documents in reflected infrared rays, discolored texts made by paints that absorb these rays well, can be detected.

Ultraviolet (UV) radiation is electromagnetic radiation between the violet border of visible radiation and X-ray radiation.

UV light source is an ultraviolet illuminator that is a quartz flask filled with an inert gas (e.g. argon), on the inner surface of which a small amount of atomized mercury is applied. Their main advantages are small size and energy consumption. UV radiation receivers include documents, goods, using a substance capable of luminescing under the influence of radiation in the UV range as a sensitive element.

The use of UV rays makes it possible to distinguish materials with different chemical compositions that have the same appearance in visible light. This type of radiation is used in authentication of customs documents as well.

Examples of using of the above types of radiation are lamps and video spectral comparators of "Regula", which are actively used by customs and border authorities for the operational purposes of examining passports, ID cards and other identification documents and giving the right to cross the border; visa stamps and stamps, including for permission to enter; driver's licenses, certificates for vehicles, other documents related to vehicles; banknotes; excise and special stamps; securities and other documents with protection against counterfeiting.

X-ray radiation is electromagnetic radiation that is not visible to the human eye, occupying the spectral area between UV and gamma radiation.

Sources of X-ray are X-ray tube, some types of radioactive isotopes, accelerators (betatron) and electron storage devices (synchrotron radiation), lasers, etc. X-ray ray receivers include goods and individuals.

X-ray is used in those cases when it is necessary to shine through thick and dense objects, in particular, in stationary inspection and inspection complexes.

The main technology widely used in inspection installations is the technology of obtaining images of objects when they are illuminated by penetrating radi-

ation, that is, the technology of radiographic inspection installations, which takes place in the “Inspector”, “Shmel”, “Calibri”, and other inspection installations.

A prospective development of inspection technology is the application of the nanosecond neutron analyzing method, which includes irradiating a suspicious object with neutrons and measuring the secondary gamma radiation generated by neutrons in the material of the object, which is necessary to address the issue of image overlap in a technical means of customs control using only the X-ray method.

Thus, infrared and UV rays are one of the most popular and effective tools for verifying the authenticity of documents, while the goods are checked by using X-ray methods. The use of electromagnetic radiation for customs control purposes is of a great importance for the Customs Service and for the state security in general.

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COMPARATIVE ANALYSIS OF DIFFERENCES BETWEEN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Сопоставительный анализ различий между логистикой и управлением цепочками поставок

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Logistics and supply chain management are some of the conditions that are widespread and used in the modern business world and in other areas that contain multiple activities, including military operations and others. It seems to have become difficult for people to indicate whether they practice logistics management or supply chain management, so that some professionals even use these terms interchangeably. However, there is a significant difference between logistics and supply chain management that is important to understand.

All the activities associated with the sourcing, procurement, conversion and logistics management comes under the title of **supply chain management**. Ac-