Focus on Customs laboratories

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Available resources, assistance and networking possibilities

WHILE MANY TRADED goods can be correctly identified and classified by simple visual inspection or documentation review, some require chemical or scientific testing to ascertain their identity and enable their correct classification. Products as diverse as acetaminophen (a pharmaceutical product), saccharin (an artificial sweetener), ascorbic acid (a vitamin), piperonal (a drug precursor) or potassium cyanide (a potent poison), for example, cannot be differentiated without being analysed.

This applies not only to classic chemical products. Without chemical testing, it is impossible to distinguish powdered baby formula from a milk protein concentrate, natural honey from a substitute made with glucose syrup and colourants, or wheat flour from a modified starch for industrial use. Equally, the classification of a ceramic mug depends on whether it is made of stoneware or earthenware, and the classification of a textile product made of a mixture of cotton and synthetic fibres depends on the predominance of one of the fibres.

Processing chemical and scientific analyses is not essential only for the correct classification of products in the Harmonized System (HS), it is also critical to the fight against dangerous substances, for instance, chemical weapons, ozone depleting substances, pesticides, persistent organic products, and drug precursors, etc.

These analyses are performed by laboratories. They can be Customs laboratories, which may be public or private but are specifically under the direction of a Customs administration, national laboratories which fall under the jurisdiction of another government agency, or private laboratories which undertake work on behalf of Customs.

Customs laboratories differ from other laboratories in that they have to analyse all types of products mainly for the purposes of Customs classification, with staff skilled in two disciplines: chemical analysis and Customs regulation. As well as solid training in analytical methods, industrial processes of manufacturing, and chemistry in general, the staff must have an

in-depth knowledge of Customs procedures and regulations pertaining to, for example, the classification of goods, the application of excise duties and the processing of export refunds among others.

Most Customs administrations have their own Customs laboratories. The use of private laboratories and State-owned laboratories is exceptional. In such cases, ensuring good communication and coordination between Customs and the laboratories is crucial in terms of the relevance of test results.

Indeed, although basic analysis would not pose issues to the staff of private laboratories, some complex analyses may require a specific knowledge of Customs matters. The same problem may arise when working with a national laboratory falling under the control of another public agency. Some private laboratories include units specialized in carrying out analyses for Customs purposes – Danish Customs, for example, has used the services of such a laboratory since 1908 (see article on page 38).

Another benefit for Customs administrations in establishing their own laboratories is that, as they fall directly under the administration's authority, Customs has a direct say on issues relating to staff management, training and equipment, and can ensure optimal use of the laboratory. The drawback is that the costs associated with the running and maintenance of a Customs laboratory may be high, as it is important that they are well-resourced and fully equipped for optimum results.

Role of Customs laboratories

Customs laboratories are an essential instrument for Customs authorities, which rely on their expertise when faced with the classification of certain products for the purposes of their national tariff nomenclature. The WCO Secretariat also uses the expertise of laboratories when tasked with the classification of certain goods for purposes of the HS nomenclature. The work of laboratories, however, goes on behind the scenes on a daily basis, as one of the unseen faces of Customs and border management.

The WCO has drawn up practical recommendations, as well as a comprehensive technical assistance and training programme, to assist its Members in improving the efficiency of their Customs laboratories and in implementing such a facility or assessing its implementation feasibility and practicality.

Traditionally, Customs laboratories perform chemical analyses to determine the tariff classification of goods referenced in the Customs nomenclature, which is crucial for applying the correct duties, particularly in agricultural and industrial trade, as well as for matters relating to anti-dumping procedures and export refunds. Customs laboratories may also provide advice on Binding Tariff Information (BTI) requests.

Customs laboratories are also becoming more and more involved in export control, in environmental protection (e.g., controlling the trade in ozone depleting substances and hazardous waste), in endangered species protection, and in controlling dangerous goods (e.g., pesticides, persistent organic pollutants and chemical weapons, and narcotics and drug precursors).

Some laboratories, such as the one in Japan, also provide advice on the performance assessment of various inspection equipment, along with methods for their practical use, and are collaborating with private firms to tap into new fields of research, including the development of contraband detection equipment.

For example, the Japan Customs Central Laboratory is currently conducting research on a "metal detector" that responds only to iron (the material used in firearms) and a "detection radar" that detects drugs hidden inside the hollowed-out cavities in stone or wooden objects.

There is no such thing as a typical Customs laboratory. Some have a long history, such as the Austrian Customs Laboratory in Vienna established in 1848, while others have only recently been set up. No laboratory is exactly the same as the next. They may differ in terms of staff numbers, remit, tasks, range of available equipment, accredited analytical methods, and particular specialities offered.

Guidance and resources

Taking the above factors into account, the WCO has drawn up practical recommendations, as well as a comprehensive technical assistance and training programme, to assist its Members in improving the efficiency of their Customs laboratories and in implementing such a facility or assessing its implementation feasibility and practicality.

The Organization notably developed a Customs Laboratory Guide as a practical handbook for the establishment or improvement of Customs laboratories in developing countries. It includes "best practices" covering a variety of issues and operations: from the organizational structure, staff categories, design, space utilization, equipment and information systems, to safety and pollution measures, sample preparation methods, recommended analytical methods, and operation and results reporting procedures.

Several databases, some managed by the WCO and some managed by other institutions, are specifically designed for the purpose of facilitating the classification of products. These databases may also be helpful in the day-to-day routine of a Customs laboratory:

- The WCO's HS database and the database of classification advice offer the possibility of searching by keyword or by using an HS code to retrieve information.

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- The INN Table, an Excel spreadsheet that contains the HS classification of international non-proprietary names agreed by the WCO HS Committee (HSC).

- The European Union (EU) Inter Laboratory Inventory of Analytical Determination (ILIADe) is a shared directory of analytical methods that laboratories are required to use for Customs purposes, as well as for authenticity and quality controls, consumer health protection and environmental controls.

- The European Chemical Inventory of Chemical Substances (ECICS) which lists chemical names along with their tariff classification in the European Community's Combined Nomenclature (CN). As the CN codes are based on the WCO HS, ECICS tariff classifications are helpful throughout the world.

- The Binding Tariff Information database (EBTI-database) which contains classification decisions issued by EU Member States. It also provides details of the composition of goods (excluding any confidential information), and justifications for classifications.

Another interesting resource for Customs and tax authorities is the sampling manual developed by the Sampling Working Group of the European Commission (EC) to ensure the quality of samples received for analysis at laboratories.

Also, the WCO launched the WCO/Japan Regional Customs Laboratories Programme (RCLP) in 2013, under the sponsorship of Japan Customs. It provides an opportunity for chemists or analysts working, or planning to work, at a Customs laboratory in a developing country to update their skills in chemical analysis for HS classification purposes and to improve their knowledge of the HS.

Under the RCLP, participants spend the first week of the programme at WCO Headquarters and then about seven weeks at the WCO Regional Customs Laboratory (RCL) in Japan where they are exposed to the latest technologies and techniques.

WCO technical assistance

Based on the WCO Customs Laboratory Guide, the WCO Secretariat provides technical assistance for the implementation or modernization of Customs laboratories, as well as specific training for laboratory staff. Assistance generally takes the form of expert assessment missions and workshops.

To deliver assistance, the WCO has so far benefitted from the experience of Customs chemists from Germany, Japan, Mexico, the Netherlands and Spain, who have kindly been made available by their respective Customs administrations. Funding has been provided by German Customs, Japan Customs, the EC's Taxation and Customs Union Directorate-General (DG TAXUD), the Swedish International Development Cooperation Agency (SIDA), and the Norwegian Agency for Development Cooperation (NORAD).

Prior to the implementation of any assistance activity, the WCO Secretariat invites the future beneficiaries to express precisely the nature of the assistance requested and the objective sought, including a description of the status quo and plans for the Customs laboratory, its possible use, the volume of trade of target commodities, and the training required. This enables the content of the assistance to be customized accordingly.

Most WCO training starts with presentations aimed at broadening laboratory workers' knowledge of the HS Convention

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The content of the WCO Customs Laboratory Guide and existing useful resources, such as the databases and websites mentioned above, are presented and discussed too. Last but not least, some analytical determinations of special interest for the country concerned are conducted in the laboratory under the supervision of WCO experts.

The Serbian Customs administration, for example, requested the assistance of the WCO in modernizing its laboratory, which included the construction of a new laboratory and the purchase of new equipment, as well as taking on new employees and training employees on the use of the new equipment and on testing methods. Training was also conducted on specific issues identified by Serbia relating to alcohol, textured/non-textured vegetable fat/oil and mineral products.

WCO experts assisted Albanian Customs laboratory staff in analysing certain types of goods with which the administration was facing difficulties, such as energy drinks, solvents, additives, textiles and shoes. In addition, at Albania's request, information and examples of the classification of mineral oil were provided, as well as basic knowledge on the taxation of mineral oils in the EU and common variants of mineral oil tax evasion.

In Ecuador, a National Workshop on the Modernization of the Customs Laboratory was organized, enabling laboratory staff and WCO experts to discuss particular problems in the day-to-day routine of laboratory staff activities, as well as future plans for the enhancement of the laboratory. Staff were also trained on the

amendments introduced in the 2012 edition of the HS, and more particularly on specific areas concerning chemical products, pharmaceutical products, "hi-tech" products and vehicles.

The WCO undertook a feasibility study for the implementation of a new Customs laboratory in Bogota, Colombia. WCO experts provided information on the equipment, infrastructure, staff and training necessary for the modernization process.

In Ethiopia, different possibilities were examined in detail regarding the use of laboratories. Two alternative scenarios were proposed to the Ethiopian Revenues and Customs Authority (ERCA): cooperation with the Ethiopian Conformity Assessment Enterprise (ECAE), or the creation of a new ERCA-owned Customs laboratory, even though this could result in a duplication of equipment. It was also suggested that a small laboratory be set up in the Customs warehouse at Kaliti, where about 90% of all imports are cleared, to speed up the clearance process.

Customs officers in Montenegro received expert training on the use and possibilities of a Customs laboratory for goods classification and tariff management, as well as training in the management of a Customs laboratory. Information about the equipment, infrastructure, staff and training necessary for the modernization of the country's Customs laboratory was also provided.

In Tanzania, a comprehensive feasibility study on the implementation of a Customs laboratory in the Tanzania Revenue Authority was undertaken. It included recommendations on the characteristics of Customs laboratories (i.e. their main field of work and how to develop this activity) and the number of laboratories to be set up, as well as their location, distribution, design, organizational structure and necessary equipment.

Cooperation and networking

Despite their particularities, Customs laboratories face common problems and challenges. During WCO workshops, participants are informed about relevant examples of cooperation and networking between Customs laboratories in the world. Among the initiatives taken in this domain are the WCO Regional Customs Laboratory (RCL) and the Customs Laboratories European Network (CLEN).

There is, for the time being, only one WCO RCL. Launched in November 2014 within the Central Customs Laboratory of Japan Customs in Kashiwa City, it will be used to provide regional training and technical assistance to Asia/Pacific administrations in the field of chemical analysis, as well as to promote information-sharing between the region's Customs chemists, classification specialists and enforcement officers.

Dating back to 1999, the CLEN aims to rationalize, coordinate and optimize the use of human and technical resources among European Customs laboratories. One of its most important missions is to anticipate changes in the Customs environment and to ensure that the Customs laboratories are sufficiently prepared to meet both current and future challenges.

Through networking and face-to-face contacts between the Customs laboratories, the WCO RCL in Japan and the CLEN aim to make it easier to exchange experiences and best practices. In addition, there are other platforms, such as the one developed by the European Monitoring Centre for Drugs and Drug Addiction for Customs chemists, which allow Customs scientists to share their results.

Informal presentations and encounters make it easier to establish collaboration initiatives as the case arises, and in this regard the WCO encourages its Members' Customs laboratories to develop cooperative links between one another, especially at the regional level.

Adaptation

From the moment a new fraud is detected, laboratories have to implement a new type of test within days. New techniques need to be developed in order to be operational as fast as possible. Today, with the arrival of new substances branded as drugs, more precise guidelines on the composition of food products in particular, and ever increasing security requirements, laboratories need to be ready and organize themselves to meet any challenges.

Concerning food products in particular, Customs administrations have to find ever more innovative solutions to identify transformed products. A French laboratory has developed a technique identifying fish species by DNA sequencing, for example. This technique is the only way to trace the species of fish when they are delivered in pieces.

To keep abreast of the latest techniques, as well as maintain cooperation among one another, there are many other bodies with which Customs laboratories should liaise, including universities, private companies and standardization bodies.

In the field of new psychoactive and medicinal substances, Customs administrations and universities often collaborate on one-off special cases. For instance, successful collaboration with the University of Toulouse in France helped French Customs to identify a medicinal substance distributed on the parallel market that was still at the experimental stage.

There have also been some interesting developments in the use of information technology (IT) to expedite procedures – a key issue for Customs administrations. The Austrian Customs Laboratory, for example, has a computer system allowing a Customs officer to fill in an electronic form to request clarification about a Customs classification and add images of the product concerned. The same system is visible to the laboratory, saving time and informing staff what samples are on the way before they have physically arrived on the premises. The Customs officer can later see the outcome of the analysis on his or her screen.

More information

www.wcoomd.org/en/topics/key-issues/customs-laboratories.aspx

Customs laboratories, chemistry and excise: an historical introduction

By Ignacio Suay-Matallana,
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AT THE END of July 1882, a strange package arrived at the Madrid Customs laboratory which was under the direction of Gabriel de la Puerta-Ródenas, a Spanish chemist who lived from 1839-1908. Destined for Spain's Prime Minister, the Spanish authorities, fearing for the Prime Minister's life, decided to have the package examined.

They first turned to the Army laboratory, and then to the School of Mines' laboratory in Madrid, but both refused to open it. Fortunately, De la Puerta, a renowned chemist, pharmacist, botanist and doctor, was willing to take on sensitive assignments, including dealing with packages that could contain chemical substances. He opened the package, deactivated the bomb and started analysing its content.

This historical anecdote is just one example of the important role played by Customs laboratories, and their special consideration and significance for national governments. Science historians have extensively studied the contributions and work of many relevant scientists from different ages, and more recently, they have also considered scientific spaces such as hospitals, including academic and municipal laboratories, but Customs laboratories have scarcely been studied.

It is true that the total number of chemists – and other experts – working in Customs laboratories is smaller than in other chemistry sites, and that such laboratories are less known by society than other laboratories open to students or the general public. Moreover, undertaking a study on Customs laboratories could be rather problematic as historians have to deal with dispersed original sources and archival material, and very often, these laboratories are located in different cities and within different government departments, such as Customs houses, port authorities or treasury offices.

Genesis

Governments have been employing science to prevent fraud and to improve their revenue collections over the centuries, but important changes in the pattern and volume of trade in the mid-19th century required a new approach in this domain. As new products and merchandise were being exchanged between countries, mainly due to the reduction in transportations costs, new spaces and experts were needed to enforce tariff regulations.

Authorities developed particular strategies to examine the merchandise and to collect Customs taxes. In Spain, preliminary inspections were carried out by appraisers, port officials and other Customs house officials, but their work was limited to visual examinations. When chemical analyses were required, local chemists or pharmacists were contracted as external experts or consultants.

Although they now only account for a small amount of the national revenue in many countries, during the 19th century, Customs duties were an important source of income for governments. For instance, they represented about 15% of the Spanish government's revenue in the mid-19th century, and they were almost the exclusive source of income for the United States (US) government before the civil war.

James Madison, the fourth US president, recognized the importance of Customs duties, declaring that "the power of taxing people and their property is essential to the very existence of government." Customs regulations were, therefore, of enormous political and economic importance for the industrial development and growth of modern nations in Europe and the Americas after what is commonly called 'the age of revolution.'

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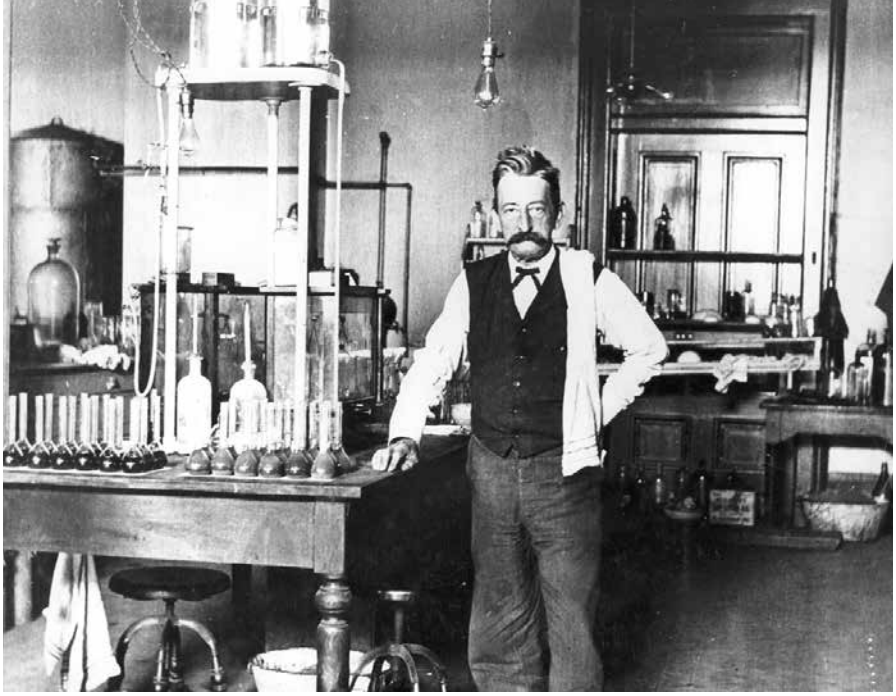
- The British government created the British Laboratory of the Board of Excise, and the Laboratory of the Board of Customs in 1842 and 1860 respectively;
- The French Customs laboratory (Laboratoire des Douanes et Droits Indirects) was founded in 1875;
- The Customs laboratory of New York was established in 1878, and later reorganized by US Customs and Border Protection into a network of Laboratories and Scientific Services;
- The Analytical Laboratory of Singapore was created in 1885, one of the first in Asia;



U.S. Customs and Border Protection historical collections

Chief Chemist Walter L. Howell analysing sugar at the New Orleans laboratory, 1906.

- The Italian Customs laboratory (Laboratorio Chimico delle Gabelle) was set up in 1886 from a previous tobacco laboratory;
- The Spanish Customs laboratory (Laboratorio central de análisis químico) was established in 1888;
- The Government Analytical Laboratory was established in Cape Town, South Africa in 1891 followed by the creation of a branch laboratory in Grahamstown, South Africa in 1910;
- Customs laboratories were in operation in Alexandria, Egypt and Tripoli, Libya by 1906;
- The Analytical Laboratory of the Straits Settlements in Penang, Malaysia was set up in 1909.

Although the academic, scientific, economic and socio-political contexts differed from country to country, the creation of a Customs laboratory was a great step forward in improving the efficiency of Customs services everywhere. These laboratories were a new scientific platform to provide general technical support for law enforcement activities.

In Spain, before the creation of a central Customs laboratory, a Customs chemical office had been in existence since 1850. Although also managed by the Ministry of Finance, it had only one chemist and a clerk in attendance with limited resources.

One of the factors which triggered the creation of the laboratory was the sudden growth in the volume of alcohol, including cheap alcohol produced for industrial proposes and not for human consumption, imported into Spain after the adoption by other European countries of new taxes on alcohol in the 1880s. The government felt that it needed more and better chemical analyses to deal with these imports as well as with other products such as petrol, oil, asphalt, sugar and other goods not produced domestically.

Development and expansion

Most countries having established a single Customs laboratory started expanding their numbers between the late 19th century and the first part of the 20th century. The US created one of the most decentralized Customs laboratory networks. Its first and biggest laboratory was located in New York, as the city port received about 70% of all US imports. New laboratories were also established in cities such as Chicago, Philadelphia and San Francisco.

In the United Kingdom (UK), the network spread even faster, from one laboratory in London in 1842 to 28 'chemical stations' in the 1870s. France also started creating a large network of Customs laboratories, starting with five laboratories in 1875, and expanding to 16 by 1897, although some were closed shortly thereafter.

The expansion in Italy and Spain was slower. In Italy, a central Customs laboratory was created in Rome in 1886, with a regional branch in Genoa. Later – between the 1890s and the 1930s – nine new laboratories were established. Meanwhile, Spain maintained a very centralized system with just one laboratory located in Madrid, until the 1920s, when the director of the Madrid laboratory convinced the government of the need to develop a network of regional laboratories as the country, emerging from World War I, began enjoying strong growth and rising trade exchanges. Ten new laboratories were set up in cities such as Barcelona, Seville and Valencia during the 1920s and the 1930s.

The decentralization of the laboratories implied the organization and expansion of the service. In Spain, 20 chemists and pharmacists passed a public examination to be appointed as Customs chemists in 1925. After a short practical training period, under the supervision of the director of the Customs central laboratory in Madrid, they were moved to the newly-created regional Customs laboratories. The new structure of the service included one director, four chemists and one clerk in Madrid, as well as a director and a chemist in each regional laboratory.

Experts, controversies and cooperation

Customs laboratories are exceptional spaces, where scientific, economic, regulatory and administrative knowledge is combined. In many countries, they have been headed by some of the most recognized and influential scientists of their time.

Stanislao Cannizzaro (1826-1910), who built a modern and well-equipped chemical laboratory in Rome, Italy, was one of greatest Italian chemists and is considered as having contributed to laying the foundation of modern chemistry. Ulysse Gayon (1845-1929), one of the favourite pupils of the French scientist Louis Pasteur, was in charge of the Customs laboratory in Bordeaux, France.

In the UK, British chemist Edward Thorpe (1845-1925), who served as President of the Society of Chemical Industry, took over the direction of the Somerset House Laboratory, also known as the Government Laboratory, which was originally established in 1842 for the prevention of the adulteration of tobacco products and then expanded by the 1875 Sale of Food and Drugs Law.

Thorpe moved the laboratory in 1897 to a new building of his own design and helped to further the effectiveness and reputation of this government laboratory. With his

staff, he worked on matters of public health, including the detection of arsenic in beer and the elimination of lead from pottery.

In the case of Spain, there was Gabriel de la Puerta-Ródenas, mentioned in the opening paragraph of this article, and José Casares-Gil (1866-1961) who had notable academic and political authority. Both were chairs at the University of Madrid, fellows of different national and international scientific academies, and also members of the Senate.

Because of their location between the scientific world and the economic world, Customs chemists were experts at circulating between different spaces – universities, academies, industries, administrative offices, and even courts – and frequently participated in controversies or disputes with economic and social implications.

For instance, in the 1930s many chemists, agriculture engineers, diplomats and grape producers from different countries participated in international conferences to agree on a "wine quality" standard that included common gauge practices and chemical operations to test this alcoholic beverage which was highly taxed at that time.

When importers or traders were not satisfied with the results of the chemical analysis, usually because they had to pay more taxes than expected, they were allowed to request a second analysis of the merchandise. Afterwards, it was even possible to appeal the chemical test to a Customs court, where chemists had to explain their scientific procedures and the report.

In other cases, there were problems related to the use of different standards to determine quality or purity of substances, so the value of the merchandise was different depending on the country. Finally, there were also economic disputes among different countries that imposed Customs taxes to protect their domestic goods and their national economy.

Although these issues are still current and valid today, the establishment, after World War II, of new international regulatory organizations, such as the WCO, was a crucial step forward in reducing economic disputes, achieving standardization and improving the administration of Customs, thereby facilitating international commerce.

References pertaining to this article may be obtained directly from the author, Ignacio Suay-Matallana.

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Dominican Republic

Photos © Dominican Republic General Directorate of Customs

opens top-notch Customs laboratory

By the General Directorate of Customs of the Dominican Republic

ON 18 FEBRUARY 2015, the General Directorate of Customs (DGA) of the Dominican Republic officially opened a modern scientific laboratory occupying a site measuring 1,217 square metres in the city of Santo Domingo. The facility has an uninterruptible power supply (UPS), an emergency generator, kitchen facilities, vehicle parking and an area for unloading and receiving samples, and complies with the highest health and safety standards. Designed to improve the managerial efficiency, predictability and availability, within its remit, of the DGA vis-à-vis all external trade users and operators, the new laboratory is at the forefront of 21st century cutting-edge technology and science.

The laboratory embodies the political will on the part of the current management of the DGA to implement the institutional reforms and modernization currently under way as part of the Customs 2013-2016 strategic plan. The role of the laboratory is not only to satisfy the analytical and inspection requirements for goods that are difficult to identify in order to determine the correct duties and taxes payable under the prevailing tariff structure, but also to provide high standards of protection for the public against the potential entry into the country of products that may adversely affect any aspect of human or animal health, the environment and natural resources. It is one of the most significant assets available to the country's Customs administration.

Prior to its establishment, the analysis of samples was conducted at laboratories in Mexico and Spain, as well as at national laboratories belonging to local universities, depending on the complexity of the case. The WCO was also consulted. The principal reason behind the DGA's decision to construct the new laboratory was the pressing need to be able to analyse metallic and non-metallic mineral products, such as gold, silver, copper, zinc, iron, aluminum, palladium, platinum and europium, exported from the country's mining concessions, that were complex to identify, both in terms of quantity and quality.

Exhaustive controls of these substances are required upon export to determine component volumes which are of fiscal importance to the national budget. According to data published by the Dominican Geology Society (SODOGEO), the country is sitting on nearly 58 billion US dollars' worth of unexplored reserves of minerals and metals.

The Customs laboratory will also be an indispensable tool for the Dominican Republic to monitor compliance with environmental protection regulations relating to, for example, ozone-depleting substances, chemical weapons, heavy metals, persistent organic compounds and pesticides, and for the purposes of protecting endangered and protected animals, combating drugs trafficking, controlling chemical precursors, etc. Hence the importance to Customs of a laboratory of this status built to high specifications and incorporating state-of-the-art equipment.

By being able to identify products through analysis, it will be possible to determine precisely the applicable fiscal regime and to improve the effectiveness of Customs controls on restricted or prohibited products, thereby preventing uncertainty, arbitrariness and, worst of all, fiscal evasion through Customs fraud – a very frequent occurrence in countries where imported goods are often not subjected to tests and sampling, especially in industries dealing with chemicals, food products, pharmaceuticals, cosmetics, textiles and metal products, among others.

In addition, the Dominican Republic's Customs laboratory will be an effective ally to the national agricultural, agrichemical, pharmaceutical and petrochemical industries, as well as to public and private institutions, as they will have a centre to which they can refer materials or substances for analysis when they have questions about the biological origin or composition of such goods.

The laboratory was constructed using the DGA's own funds at a cost of 3,573,024 US dollars – equivalent to 155,283,638 Dominican pesos, inclusive of construction works and adjustments to the physical facilities, technological equipment, fittings, etc. The DGA also drew upon advice from the Spanish Customs and Excise Central Laboratory of Madrid, which has been in operation for about 125 years and has a remarkable ability to keep pace with scientific progress necessary to tackle the increasingly complex challenges related to physical inspection of goods.

The expert chemists selected to join the laboratory staff had to pass a series of tests to demonstrate not only their analytical expertise but also their specialist knowledge and skills in taxation and Customs legislation. They also received special training abroad in team management. All this was done with the aim of ensuring that this modern facility runs smoothly and delivers high-level results for the country.

The establishment of the laboratory represents a significant step forward for the DGA in its process of institutional reform and modernization. It will also benefit the entire region, as the laboratory will be open to neighbouring Customs administrations and to regional and international bodies that require an analysis to be conducted of any product that is the subject either of a trade or classification dispute relating to its composition or specific properties.

More information
www.aduanas.gob.do

Is it possible to use a private laboratory as a Customs laboratory?

By Laila Jensen,
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IN ONE WORD: Yes! At least, that is the experience of the Danish Customs and Tax Administration (SKAT). There are, of course, issues to be considered and addressed before taking the decision to use a private laboratory as a Customs laboratory, but once the issues have been addressed, it is entirely possible.

The first question that arises is why even consider using a private laboratory? Being a small country with an equally small number of Customs officers, it would be difficult for Denmark to finance a Customs laboratory with the necessary equipment and staff it with qualified personnel. Even if was possible, SKAT would not have a sufficient number of samples to analyse, thereby finding it hard to justify the cost of having its own Customs laboratory.

Advantages for Customs

The most important advantage is that instead of just having access to the expertise of one or two Customs chemists and a few laboratory technicians, SKAT now has access to the expertise of the approximately 1,300 employees of FORCE Technology – the company that it uses as a Customs laboratory – who cover a wide range of specialities.

Not only can the company handle usual SKAT requests to analyse the content of sugar, cocoa, alcohol, proteins, etc., but also questions about materials like polymers, ceramics and metals, including how a set-top box works and whether a screw has been turned from a bar or not, as well as liquid scintillation analysis to determine biogenic alcohol or fuel, etc. Seen from the point of view of a Customs officer, it makes life easier when all technical questions can be directed to the same place and not to a wide range of advisory bodies.

Using a laboratory which is ISO 17025 accredited for some of the analytical methods important for Customs purposes, which participates regularly in proficiency tests and which has a quality management system is generally a good idea. Besides its accreditation, another advantage of having an external laboratory is that the analysis is done by a body independent of SKAT, thereby adding credibility to the results of the laboratory. As SKAT bases its final decision on these results, it also adds extra credibility to Customs' decision.

Issues that need to be addressed

There are, of course, some issues that need to be addressed before deciding on the use of a private laboratory as a Customs laboratory. The same factor that lends extra creditability to the analytical result – the fact that the laboratory is not part of the Customs authority – is also cause for the main issue that needs to be addressed, namely the matter of confidentiality.

It goes without saying that the contract between SKAT and FORCE Technology stipulates absolute confidentiality. However, even in everyday work, confidentiality remains a focus issue – for example, emails are used internally between Customs officers without having to worry about the confidentiality of the content. But as the laboratory does not use SKAT's internal secure mail system, extra precaution is needed when communicating with them.

Therefore, proper routines and secure emails, including a system to handle requests for analysis, receipts of samples and the exchange of analytical results, may all be helpful in ensuring safe and easy communication between Customs and the laboratory.

Another issue is that as the laboratory is private, it is often not recognized as an official Customs laboratory, making access to forums reserved for official Customs laboratories, on occasion, slightly more problematic than would otherwise be the case.

Finding the right laboratory is another major issue. Many laboratories can provide you with sound and valid results, when it comes to the content of alcohol, sugars, proteins, etc., but not many of them have knowledge of the Harmonized System – its definition of stainless steel, or that theobromine is decisive when determining cocoa content, or what is meant with composition leather, or how to differentiate between ceramics and porcelain, etc.

There is also the issue of the contract between the laboratory and the Customs administration to consider. Due to the rules on public procurement, every four years a call for tender for the contract has to be published. This requires quite a significant amount of work, both from the Customs authority and the tenderers wishing to submit a bid for the contract.

Special care must be taken to ensure that the contract covers all the needs of the Customs administration at a reasonable price level. Even the best laboratory will occasionally need help from experts outside the laboratory, so procedures concerning such subcontractors should also be in place.

Collaboration between Customs and the laboratory

For the Customs officer, collaborating with the laboratory follows the normal practice. A sample is taken or provided together with a request for an advance ruling. The officer-in-charge then decides if an analysis is required – if so, the sample together with any additional information is forwarded to the laboratory for analysis. After performing the analysis, the laboratory forwards its report and a suggested classification to the Customs officer-in-charge.

It is then up to the Customs officer to make the final decision based on the available information. The officer is not obliged to follow the laboratory's suggested classification but will mostly do so. Any doubts or uncertainties will usually be discussed between the Customs officer-in-charge and the laboratory before a suggested classification is overturned.

The importer may request access to the communication between Customs and the laboratory – the laboratory's analytical results would generally be provided to the requesting importer but any other communication would only be provided upon special request under the rules for 'access to own files.'

Besides everyday discussions between individual Customs officers and the laboratory, quarterly meetings are also held between representatives of FORCE Technology and SKAT to discuss general issues, problematic cases, and so on.

The use of a private laboratory as a Customs laboratory is not a new thing in Denmark. The first contract between Customs and a private laboratory was signed on 1 April 1908! Over the years the name of the laboratory has changed a number of times, it has been a private laboratory then one under governmental control and later privatized again, it has merged with other laboratories, etc., however collaboration between Customs and the laboratory has continued throughout.

The right laboratory is a must

So yes, it is possible to use a private laboratory as a Customs laboratory. Although it does require some considerations beforehand, what is most important is that it should be the right laboratory which can handle all the needs of a Customs administration.

More information
www.skat.dk

SKAT (Tax)

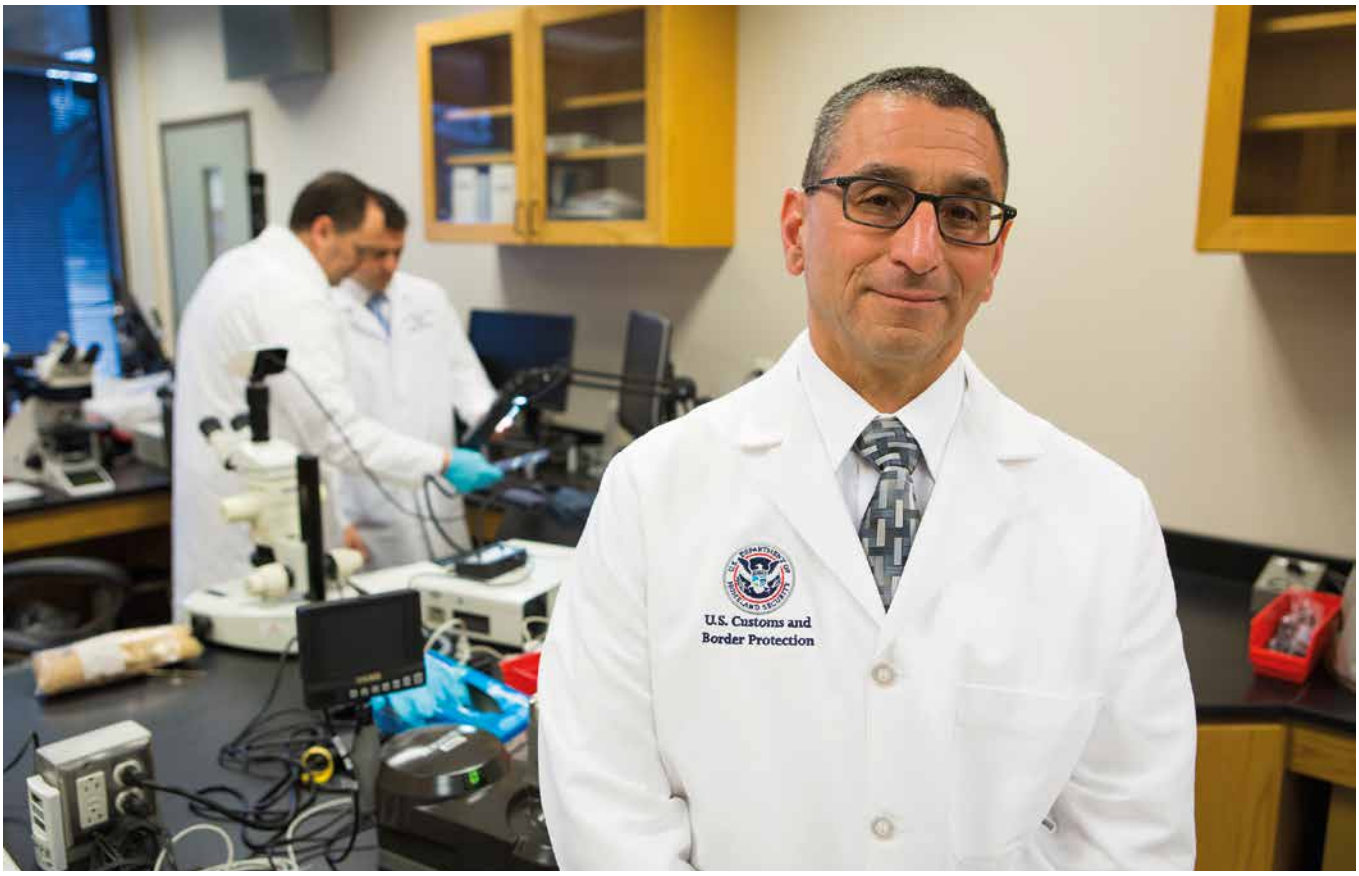
The Danish Customs and Tax Administration, or SKAT, is an independent national agency responsible for administering and enforcing tax laws. SKAT handles the administration of all tasks relating to direct and indirect taxes, Customs, debt collection, and the tax assessment of real estate and vehicles.

The contract between SKAT and FORCE Technology covers a wide array of topics. Besides the analysis of samples for Customs, it also covers analysis for excise duty purposes, technical advice concerning legal texts and the translation thereof, and participation in different meetings at the national and international level.

FORCE Technology

FORCE Technology is one of the leading technological consulting and service companies in Denmark and internationally. The company makes a targeted effort to sell highly specialized engineering knowledge, offering practical and cost-effective solutions to a wide range of industries. It has more than 1,300 employees working at its headquarters in Brøndby and in offices all over Denmark, as well as at subsidiaries in China, Norway, Singapore and Sweden.

The Customs laboratory is part of FORCE Technology's department of chemical analysis. It is equipped with modern analytical instruments for inorganic, organic, material and surface analysis, as well as equipment for physical testing. The Customs chemists consult regularly with experts from other departments, when additional specialized knowledge is needed to answer questions relating to Customs matters.



Ira Reese, Executive Director of CBP's Laboratories and Scientific Services and current Chairperson of the WCO Scientific Sub-Committee, at a CBP laboratory where scientists Stephen Cassata and Michael McCormick examine seized digital evidence. Photo: James Tourtellotte

Customs laboratories in the United States: at the frontline of fighting fraud

By Marcy Mason,
A WRITER WHO COVERS TRADE FOR US CUSTOMS AND BORDER PROTECTION

IN LATE DECEMBER 2010, the news broke about a Seattle court case involving counterfeit honey. A 70-year old Bellevue, Washington man, Chung Po Liu, had been sentenced to a year and a day in prison and was ordered to pay 400,000 US dollars (USD) in restitution for importing falsely declared Chinese honey.

Liu was trying to avoid paying USD 2.9 million in tariffs on the honey, which had been shipped through the Philippines and Thailand where it was re-labelled to make it appear as if it were a product of those countries. But aside from attempting to avoid paying millions of dollars in anti-dumping duties that had been added to the price of the honey to protect United States (US) industry, Liu's deception had endangered the American public.

Some of the honey was contaminated. When the shipments arrived at the port of Seattle, samples of the honey were sent to the US Customs and Border Protection (CBP) laboratories for testing. There, the true origin of the honey was discovered and the CBP scientists found that it was tainted with Ciprofloxacin, an antibiotic that is banned in the US as an unsafe food additive.

While few outside the trade community are aware of the vital role that the CBP labs play in protecting Americans and the US economy, the labs' work is critically important to keeping the public safe from counterfeit, substandard, or any other type of fraudulent goods.

"In order to determine whether goods are fraudulent, you need technical analysis. You need to be able to physically analyse the shipment," said Ira Reese, the Executive Director of CBP's Laboratories and Scientific Services division. "It's not something you can do from a cursory glance or examination. It requires an in-depth look by scientists."

And as Reese pointed out, "products don't stop being imported incorrectly until you take some action to stop them. Legally, it is very difficult to develop a case without the presentation of physical evidence," he said. "Our labs present the physical evidence that can be further investigated or brought into court for prosecution. It gives legal reasoning or probable cause for seizure of the material so it doesn't enter the commerce of the US and end up on store shelves."

Over the years, the CBP labs have tested a multitude of suspect goods. Starting in the 1950s, the labs began testing for counterfeits as part of the US Customs Service, one of CBP's legacy agencies. "Customs did most of the investigations on imported alcohol," said Reese. "There were big investigations regarding the importation

of fake brandy, which was alcohol mixed with flavourings and caramel colouring," he said.

As time passed, the labs expanded their testing of counterfeit and substandard products. All kinds of goods were analysed including designer clothing, handbags, shoes, jewellery, perfumes, toys, computers, pharmaceuticals and the list goes on. "Anytime there's the potential to make money, there's a counterfeit," said Reese.

Dangerous goods

Although the economic losses to American companies are staggering, estimated conservatively at hundreds of millions of dollars per year, that's not all that's troubling. Many knockoffs are dangerous.

"Counterfeiters will use whatever materials they have to make a copy of a legitimate product. They don't care if it's dangerous. They're just out to make money," said Stephen Cassata, a senior science officer who works at CBP's Laboratories and Scientific Services headquarters in Washington, D.C. "They don't pay any licensing fees to a legitimate rights holder and there's no real inspection of these products for quality assurance. So wearing apparel, for example, may still have chemical solvents in the fabric that could irritate your skin."

But the dangers can be worse. In 2007, the CBP labs were on high alert when cats and dogs were dying from melamine-tainted pet food. "It went on for about six months," said Reese. "Instead of putting expensive protein into the products, they used melamine, a cheap chemical used to make plastics. It resulted in killing a lot of dogs and cats, causing them to die of kidney failure," he said.

That same year, the CBP labs also found toothpaste containing diethylene glycol, a poisonous chemical used in antifreeze. "It was suspected out in the field and they sent it to us," said Reese. "We confirmed their suspicion."

The CBP labs also have uncovered other highly dangerous counterfeit products that could harm unsuspecting consumers. With the advent of the Internet, counterfeit and unapproved drugs from fake online pharmacies have become readily available.

"I did a chemical analysis on a pharmaceutical shipment that was sent by one of our officers to the Chicago lab," said Mike McCormick, a CBP science officer who is now based at the agency's headquarters. "There were two active ingredients to treat erectile dysfunction in the same tablet – sildenafil citrate and tadalafil, the active ingredients for Viagra and Cialis respectively," he said. "This combination hasn't been clinically tested or been approved, so you wouldn't know what kind of an effect it would have."

Likewise, the CBP labs are at the forefront of nearly every economic or safety-related issue that involves potentially fraudulent imports or exports. For example, since 2003, when the US Department of Commerce issued an antidumping order to protect the domestic catfish industry, CBP's New York lab has been testing seafood to identify mislabelled fish.

> "Our labs present the physical evidence that can be further investigated or brought into court for prosecution. It gives legal reasoning or probable cause for seizure of the material so it doesn't enter the commerce of the US and end up on store shelves."

The problem arose because pangasius, a Vietnamese fish that has a striking resemblance to catfish, was being sold below fair market value and was negatively impacting the sale of US catfish. As a result of the antidumping order, importers of the Vietnamese fish were required to pay higher duties to compensate for the unfair pricing. This, in turn, led to mislabelling of the fish to pass it off as everything from catfish to sole to flounder to grouper to avoid paying the extra tariff.

CBP's New York lab initially used protein testing to identify the fish. "We were looking at the proteins in the fish to identify catfish and the three species that were named in the dumping order," said Laura Goldstein, the Director of CBP's New York lab. The technique required authentic references of each type of fish so that Goldstein's team could do side-by-side comparisons with the test samples to see if the proteins matched.

DNA testing

Eventually, the protein testing became outdated and the New York lab discovered a more advanced technique of identifying species using DNA bar coding. The bar coding analysis identifies species by using a section of DNA from the organism's genetic material. A key component of the DNA bar coding process is a database that contains a library of species identifiers.

"We're comparing samples that are submitted to the lab for analysis with the known species in the database," said Goldstein. "What we're doing is called nonhuman DNA testing. We're looking to identify a species rather than an individual. Human DNA testing looks to identify an individual," she said.

The database contains DNA bar codes for more than 2 million specimens of plants and animals, including approximately 14,000 species of fish, not including shellfish. "Using our old technique, we needed authenticated samples that were very difficult to obtain. So we were limited in what we could identify previously," said Goldstein.

"Now we can just take our unknown and search it against the database and look at the results. We can identify a much larger range of products." The DNA testing is also more accurate. "It's a much more specific and accurate technique because of the coding matches. You get a match or you don't get a match. It's really as simple as that," said Goldstein. "And the matches are a 98% probability or better."

But how does all of this protect the American public? "We're looking at the species and identifying if it's what it's being claimed as, what it's being imported as, and what it's being sold as," said Goldstein. "We're also testing the fish

Sharon Stricklin, a CBP scientist, discusses the microscopic analysis of an adulterated honey sample with Carson Watts, Director of CBP's Savannah laboratory. Photo: Christopher Kana

Jenny Tsang, Assistant Director of CBP's San Francisco laboratory, applies a chemical solvent to a computer chip to see if its coating or manufacturer's markings can be removed, one of the many signs of a counterfeit chip. Photo: Rand Careaga

for contaminants such as antibiotics and antifungals that we don't want in our foods," she said. "In some cases, we're working with other agencies that look at products that are sold here in the US. We're trying our best to keep unsafe products out of the marketplace so that people aren't exposed to them."

In recent months, high profile studies on seafood fraud have drawn considerable attention to the problems of mislabelled fish. "It's an age-old problem. Mislabelling of seafood is not a new concept," said Matt Fass, the President of Maritime Products International, a Newport News, Virginia-based company that imports, exports, and distributes seafood products from all over the world.

"We've done a lot as an industry to police ourselves, but it helps to partner with the government agencies that also can be out there with effective enforcement tools such as the DNA testing that the CBP labs are using," he said. "As consumers, people should know what they're buying. They should know what they're eating. We all want to know what's going into our bodies."

Contaminated honey

During the early 2000s, honey became another concern of the CBP labs. "The Chinese were importing honey into the US at a very low price and it was endangering our domestic industry," said Carson Watts, the Director of CBP's Savannah lab in Georgia.

In 2001, after the US Department of Commerce imposed stiff antidumping duties on Chinese honey, some of the major US honey companies visited the Savannah lab. Chinese exporters were circumventing the antidumping duties and the US companies wanted the CBP scientists to find a way to protect the domestic industry.

"At the time, we weren't able to tell where the imported honey came from," said Watts. "One of the things we stumbled onto was the fact that the Chinese were using the antibiotic chloramphenicol to keep the beehives healthy, and it was showing up in the honey. So the very first thing we did was test the honey for this antibiotic," he said. "If it contained chloramphenicol, it was pretty much a dead giveaway that the product came from China."

Furthermore, chloramphenicol is prohibited in food products and as such the adulterated honey would not have been allowed into the US for safety reasons. "For a small segment of the population,

exposure to chloramphenicol will induce a condition called aplastic anemia," said Watts.

"Aplastic anemia is a blood disorder that can be fatal. While chloramphenicol is used in the US to treat some very serious infections, if someone develops aplastic anemia, he or she could die," said Watts. "It's imperative to keep a food product that contains chloramphenicol off the store shelves."

It didn't take long for the Chinese exporters to catch on. "For a short period of time, the chloramphenicol disappeared," said Watts. "They knew we were using that as a marker to identify honey coming from China." But by that point, the Savannah lab had created a database to determine the honey's geographic origin.

When the US honey companies had visited the lab a couple of years earlier, the CBP scientists had asked them for help. "We told them that one of the specialties of the Savannah lab was identifying country of origin based on trace metal analysis," said Watts. In other words, the honey could be identified by its trace metal elements such as chromium, iron or copper. "If the companies could help us obtain honey from various countries, we might be able to develop a profile to tell us where the honey came from," he said.

The honey companies complied and the Savannah lab developed the ability to determine the honey's geographic origin. Then, the Chinese exporters started transshipping the honey to different countries. "The honey was going to Thailand, Malaysia, India and various other places so it wouldn't enter into the US as Chinese honey," said Watts. As the Chinese exporters changed their transshipment routes, the Savannah lab needed to obtain samples of honey from each of the countries. "We were literally chasing them around the globe," said Watts.

Changing strategies

Then the Chinese exporters changed their strategy. This time the shipments were sent from China, but they weren't declared as honey. The shipping documents labelled the cargo as sugar syrup. "They began to adulterate the honey with sugar syrups in an effort to find another way to get around the antidumping duties," explained Watts.

With the addition of sugar syrups, the product no longer tested as pure Chinese honey, and if the percentage of syrup was high enough, the shipment wouldn't be subject to the duties. "The cheapest ingredient to adulterate honey with is high fructose corn syrup," said Watts.

As the cat-and-mouse game continued, the Savannah lab discovered it could detect the high fructose corn syrup by identifying differences in the syrup's carbon atoms. "Almost a year went by and again the Chinese exporters wised up," said Watts. "They realized that the CBP labs could tell if the honey had been adulterated with high fructose corn syrup, so they switched to high fructose rice syrup instead."

The percentage of high fructose rice syrup was undetectable because the differences between the syrup's and the honey's carbon atoms were indistinguishable. At that point the US Department

Interagency cooperation

CBP's labs have helped other agencies protect the American public. For example, in 2010, the labs tested shipments of honey from Mongolia to confirm the country of origin. The CBP scientists discovered the honey was actually from China and that some of the product was contaminated with antibiotics. The shipments were seized and the US Food and Drug Administration (FDA), the regulatory agency responsible for assuring that food coming into the US is safe, was notified.

The FDA attempted to contact the importer, but the shipment was abandoned and no importer could be found. This, in turn, sparked an FDA investigation. "We found thousands of pages of fraudulent documents from various importers. We call them 'shell companies,'" said Nicholas Lahey, an investigator for the FDA's Los Angeles District Import Operations.

"Our investigators found that a lot of these shell companies are really just post office boxes. There aren't any actual company locations. They file articles of incorporation, but there's no one present in the US. They're in China," he said. "The only people here are paid freight forwarders and brokers."

The investigation also revealed that the company fronts involved a couple of freight forwarders who were importing restricted and prohibited products that could harm the public. The FDA kept a close watch on the freight forwarders and in 2012 targeted a shipment of apple juice that one of the freight forwarders was handling for a client. Both the CBP and FDA labs tested the apple juice and found fraud.

"Lo and behold, it was not Chinese apple juice. It was Chinese honey contaminated with trace levels of arsenic, lead and antibiotics," said Lahey. "We never would have looked at the apple juice if we hadn't done the investigation, which was initiated because of the country of origin testing done by the CBP labs."

This prompted the FDA to look further. "We found a slew of other companies that were bringing in different commodities, not just honey. There were dietary supplements and other FDA-regulated products," said Lahey. "It triggered a whole chain, which again, was based on the CBP lab results from two years earlier."

of Commerce changed the antidumping order to say that imported Chinese honey containing any amount of rice syrup would be subject to the additional antidumping duties, which currently run as high as USD 2.63 per kilogram.

Most recently, Chinese exporters have adopted a new strategy. The shipments are no longer honey. They are now 100% rice syrup and the shipping documentation is accurate. "We analysed a sample in the lab last week," said Watts, "and sure enough, there wasn't any honey in it, but the packaging on the product for retail sale says it's pure honey. They're trying to pull the wool over the public's eyes."

Substandard bolts

The CBP labs also protect the public by testing goods to make sure they aren't substandard. For more than 25 years, the labs have been testing graded fasteners and bolts to ensure they meet specification.

The dangers of substandard and counterfeit fasteners were highly publicized during the mid- to late-1980s when they were linked to serious construction and engineering failures, which, in some cases, resulted in death. In 1990, the Fastener Quality Act was signed into US law requiring that fasteners and bolts meet certain standards for strength, grade and manufacturer's marks.

At the CBP Chicago lab, fasteners and bolts are tested for tensile strength using a 400,000-pound universal testing machine. "It's a big hydraulic lifter that's holding the top of the bolt. It can lift 200 tons," said Ernie MacMillan, the Assistant Director of CBP's Savannah lab, who for several years led the Chicago lab's team that tests metal, ceramic and mineral goods.

"When we test the bolts, we pull them until they break. When we're done, the bolt looks like a piece of stretched taffy [similar to a toffee]," he said. One of the strongest fasteners is a 1 1/2-inch, grade 8 bolt. "It's strong enough to lift 17 large African elephants without breaking," said MacMillan.

The CBP labs also test the bolts for hardness, especially at the surface. "We test the surface hardness of the bolts because the steel is heat treated," said MacMillan. "When it's heated, the surface of the steel can either lose carbon or gain carbon. If it loses carbon, it gets too soft. If it gains carbon, it gets too brittle. Somewhere in the middle is where it should be."

The bolts also undergo other tests to check the chemical composition and the manufacturer's mark. "A fastener or a bolt is suspect right away if it doesn't have a manufacturer's mark," said MacMillan. "It's already not in compliance with the Fastener Quality Act, which says it must be marked. As soon as you see one of those, you know you've got a problem."

Counterfeit electronics

Electronics are among the most highly counterfeited goods that the CBP labs test. "We first noticed a counterfeiting problem in the early 1990s, when we began looking at electronic components," said Jenny Tsang, the Assistant Director of CBP's San Francisco lab. "Then we didn't see anything for awhile, but in the last several years, we're seeing a lot of counterfeit computer chips, routers, switches and other electronic products."

> "Their ability to find fake products is a major part of the war on counterfeits. An alert officer may see something is not quite right, but he or she isn't in a position to act upon it until the lab is able to confirm the contents of the product."

According to Tsang, reused chips are especially prevalent. "Chips are counterfeit more and more because nowadays we salvage our computer parts and send the waste to China or India for recycling," she said. "Instead of throwing these parts out, counterfeiters remove the chips, scrape off the original manufacturer's markings and then remark them with forged dates, brand names and product codes to resell them as brand new," said Tsang.

"We've also seen a lot of components that were originally a genuine product, but then have been remade to look like a much higher-value product from the same manufacturer, so that counterfeiters can sell it for a much higher amount," said Tsang. "With counterfeiters, it all comes down to money. They use whatever means is necessary to sell goods at a higher price. For consumers, it's almost impossible to identify counterfeit electronic products by looking at them," she said.

The dangers of bogus computers, routers and chips have been well documented. Fake electronic and computer components have cost the electronics and information technology industries an estimated USD 100 billion per year, according to the Electronic Components Industry Association. But the seriousness of the problem extends way beyond economic damage to US companies.

"Counterfeit products not only put Cisco's brand name at risk, but also potentially places at risk all of the networks that use those products and the individuals that come in contact with them," said Paul Ortiz, then-Head of Worldwide Brand Protection for Cisco Systems Inc., one of the world's leading networking technology firms based in San Jose, California.

"If a chip is not meeting specification – if it gets too hot or it's not functioning properly – that's potentially a big safety concern," said Tsang. "Counterfeit chips in a computer can ruin infrastructure, which could potentially paralyze the flow of trade or our nation's security systems."

Malware concerns

There are also growing concerns that chips could be embedded with malware, malicious software designed specifically to damage or disrupt a system. "It could shut down a power grid or a hospital operating room. The possibilities are endless," said Tsang. Likewise, it could allow a third party to gain access to sensitive personal or government information.

CBP's San Francisco lab uses a variety of testing techniques to weed out the counterfeits. Last year, the lab purchased new X-ray equipment to examine as many as a thousand chips at a time. "We look to see if there are inconsistencies in the way the chips are configured," said Tsang. The lab also does a surface examination of the chips. "We use several different solvents," she said. "We're testing to see if the coating comes off. It's one of the indications that a chip could be counterfeit."

If a chip, component or networking system is suspected of being counterfeit, the lab contacts the rights holder. For example, said Tsang, "If it's a Cisco product, we confer with them. Cisco has a database and each of the products has its own serial number, model number and date code. If they all don't match, that means the product is counterfeit."

The value of the CBP labs has not gone unnoticed. "The CBP lab scientists are on the frontlines with the officers and they're crucial," said Brian Donnelly, the Global Security Director for the Americas Region for Pfizer, one of the world's largest pharmaceutical companies.

"Their ability to find fake products is a major part of the war on counterfeits. An alert officer may see something is not quite right, but he or she isn't in a position to act upon it until the lab is able to confirm the contents of the product," said Donnelly. The CBP labs, which are located throughout the US and in Puerto Rico, have other advantages too.

"Our labs will test goods as fast as we can," said Donnelly, a registered pharmacist and retired Federal Bureau of Investigation (FBI) special agent, "but if CBP has labs in the same city as the ports, the scientists are able to turn around a quick and effective result potentially within minutes or hours of interacting with the product, which can greatly facilitate a criminal investigation."

But it's an ongoing battle and an evolving process. "We're continuing to refine our techniques. The CBP labs are not in a position of stasis," said Watts, the Director of CBP's Savannah lab. "We have our ear to the ground, and as smuggling techniques and technology change, we're addressing them early on."

More information
www.cbp.gov