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Research Article

Computer Information Management Design Applied In Food Testing Asset

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Abstract: The study compared the traditional food detection method, proposed computer information management to food testing and constructed computing method in food testing asset. With the continuous development of scientific research and production technology, the testing requirements for food analysis: the number of samples, analysis of the cycle, analysis of the project and the accuracy of the data has a fairly high standard, the existing manual management mode has been unable to adapt to today's laboratory requirements of the development.

Keywords: Computer information management, food detection

INTRODUCTION

Health and life safety of the food quality related to the broad masses of people, affecting social stability. Food testing, not only in administrative law enforcement, market regulation and product trade play an important role in building a harmonious society is of profound significance for the development of China's economy and international trade (Van Dillen *et al*., 2004). With the continuous development of scientific research and production technology, food inspection, analysis and testing requirements in terms of the number of samples, analysis cycle analysis project and data accuracy are higher standards.

MATERIALS AND METHODS

Traditional food detection method:

GC (Gas Chromatography): Gas chromatography is a method of chromatography that uses gas as the mobile phase. Deng Sishan with her staff extracted from the patients' plasma who took Chinese traditional medicine, after using sulfuric acid, then used chloroform extraction to extract note sentiment chromatograph, finally they used FID detector to test the serum concentration of sodium valproate, so as to detect whether it is contained with the components of the western medicine. The advantages of GC is high separation efficiency, fast speed, less sample consumption, high sensitivity, widely applied, etc., but during the period of analyzing the qualitative analysis of the component, they must use the known things or the known compared data with the corresponding hyphenated party or use the other methods together to determine the result.

CE (Capillary Electrophoresis): Some literatures have reported the detection method of capillary electrophoresis for the detection of the prohibited drugs in sports health food. However, the qualitative feature of the capillary electrophoresis is also relied on the comparison of the standard, which is limited to the certain restrictions and now this kind of apparatus of capillary electrophoresis is not yet completely universal. Therefore, this detection method has not been fully and widely applied, yet.

TLC (Thin Layer Chromatography): Thin layer chromatography is putting the sample and control sample in the same thin layer plate, after the agent is spread out and dried, the spots can be detected out with using the ultraviolet lamp, which can compare with the spot size, color, shape and the containing ingredients of the criterion of Rf samples. Inspection personnel can prepare the thin layer plate and expansion agent, etc. in advance, carrying them to the site of the needed detection and have rapid detection (Bagwell and Riordan, 1986). Zhang Qiming with his staff used TLC to have test on the traditional Chinese medicine to see whether it is added sildenafil citrate illegally, it is detected that it is with constitutive rafters of sildenafil citrate. TLC can be used as the initial screening method to identify whether the traditional Chinese medicines and health products added chemical drugs illegally, with the advantages of fast, economic and simple, etc.

Food testing computing methods: The computing methods for relevant parameters in the food testing model are summarized as follows.

Food testing asset value V_m: Here, assets belong to food organizations, which are valuable information assets for attackers. If the food testing assets are worthless, even they suffer from security threat; there is not any loss, so no risk (He, 2003). In computer information security risk assessment, there are two ways to represent the asset value, namely the absolute v food testing value and the relative value. The former refers to the actual value of food testing, denoted by currency. And the latter is a range of asset value given by subjects of assessment according to the value of each asset in information systems and their importance. The absolute value of food testing assets is adopted in this study to make for representing risks intuitively and security risk decision-making analysis. The assessment of food testing asset values usually employs expert evaluation.

Frequency of attacks S: It means that in a given period, the frequency of information systems being attacked. The more frequently the systems are attacked, the more threatening they suffer and more easily the loss caused.

Defense penetration probability p_m: It means the probability of loss of information food testing assets caused by attacks breaking through the protection of safety measures. The stronger the protective measures are, the lower the probability is.

Loss coefficient p_m of effective attacks: Attacks that break through the protection of safety measures are called as the effective attack. And the loss coefficient is used to describe the influence or loss to some asset value by effective attacks, denoted by percentage of loss of asset value. And some safety measures can effectively reduce the loss coefficient of information food testing assets.

New risk p_m introduced after safety measures are taken: The implementation of safety measures can reduce security risks and may bring in new risks simultaneously. So when implementing some measures, it should make a comprehensive weigh.

It is obtained from above analysis that, in a given period, the quantitative formula for the safety risk of the m^{th} (m = 1, …, M) food information food testing asset is:

$$R_m = S_m \times V_m \times r_m \times p_m \times e_m + T_m \quad (1)$$

In which,

- p_m is the sum of attacks to the m^{th} (m = 1, …, M) information food testing asset and:

$$S_m = S \times w_m \quad (2)$$

- p_m is the value of the m^{th} (m = 1, …, M) information asset.
- p_m is the defense penetration probability for the m^{th} (m = 1, …, M) information food testing asset after being attacked; in chapter four, methods for forecasting information security risk probability in consideration of different safety measures are provided based on evidence network theory. The defense penetration probability for the m^{th} (m = 1, …, M) information food testing asset after being attacked when the k^{th} (k = 1, …, K) safety measure is taken is defined as:

$$p_m(k) = v_m \times \exp(-h_k C_{mk}) \quad (3)$$

- In which, v_m is the vulnerability of the m^{th} (m = 1, …, M) food testing asset; p_m is the cost spent in implementing the k^{th} (k = 1, …, K) safety measure by the m^{th} (m = 1, …, M) information asset; Coefficient h_k denotes the factor affecting the protection efficiency of the k^{th} (k = 1, …, K) safety measure. Then the defense penetration probability for the m^{th} (m = 1, …, M) information food testing asset after being attacked when all safety measures are taken is:

$$p_m = v_m \times \exp(-h_1 C_{m1} - h_2 C_{m2} - \cdots - h_K C_{mK}) \quad (4)$$

- p_m is the loss of the m^{th} (m = 1, …, M) information asset after being attacked successfully, denoted by the percentage of this asset value. In practical application, some measures can reduce the loss. And the more money invested into safety measure, the less the loss is. It can be represented as:

$$e_m = a_m - \sum_{k=1}^{K} b_{mk} \times C_{mk} \quad (5)$$

In which, a_m denotes the loss ratio when information food testing assets do not take any safety measure; coefficient b_{mk} denotes the impact factor of loss ratio and expenses after measures are taken. If the measures cannot reduce the loss ratio, then $b_{mk} = 0$.

- r_m is the new risk introduced after safety measures are taken, indicated by the ratio of vulnerability of information food testing assets:

$$r_m = \prod_{k=1}^{K} r_m(k) \quad (6)$$

If new risks are introduced after safety measures are taken, then $r_m(k) > 1$

If new risks have not been introduced after safety measures are taken, then $r_m(k) = 1$

- T_m is the risk of information food testing assets when considering the transmissibility of attacks

In an organization environment, all computer information managements are interconnected. Since after the m^{th} ($m = 1, \ldots, M$) information asset is attacked effectively, its correlative ones will also be attacked, its risks should not only consider the loss suffered from attacks to the asset itself, but also the losses caused by transmissibility of attacks.

If the transmissibility of attacks is considered and the effective attack only transmits once, then the risk brought to other food testing assets by the m^{th} ($m = 1, \ldots, M$) information asset after being attacked effectively in a period is:

$$T_m = S_m \times p_m \times \sum_{k=1,k\neq m}^{M} \left(\frac{w_k}{\sum_{i=1,i\neq m}^{M} w_i} \times V_k \times p_k \times r_k \times e_k \right) \quad (7)$$

Organization information food testing asset risk R: The risk of the m^{th} information food testing asset can be obtained from formula (8). It is the sum of all information food testing asset risks:

$$R = \sum_{m=1}^{M} R_m \quad (8)$$

Cost spent in implementing safety measures C: In order to control the information security risk, an organization needs to take various safety measures. Its cost is the sum of expenses spent in implementing different safety measures on each information asset:

$$C = \sum_{m=1}^{M} \sum_{k=1}^{K} C_{mk} \quad (9)$$

RESULTS AND DISCUSSION

The goal of information management applied in food testing: Information management system of food testing to achieve the following objectives:

- To achieve process of food testing from all aspects of management, in order to improve work efficiency, food testing to further standardize and systematize.
- Establish and improve the information of food testing database, the use of the data generated in the process of food testing by aggregated and summarized to supplement the database information, to facilitate future query statistics during the test data and related matters (Zhou, 2008).
- The application of this system to realize the inside the department of local area network, you can make testing personnel through the computer to complete measurement information of relevant work and also to the purpose of the paperless office.
- To achieve all the details of the supplies and equipment for the management and let the managers can master the use of all kinds of equipment that situation and chemical reagent of memory, dosage, reduce the test fee and the expenditure of the unit for budget provides reference basis.
- Realization of the management, let testing personnel timely and accurate grasp of the samples of state, including whether complete inspection, so that more effective arrangement of detection work, make the detected result more accurate and more convincing.
- Achieve to charge for the standardization of management, according to the actual situation of the region on its own, formulate charging standard, to pay check list on charges of paid check list generate reports (daily reports, monthly reports, years statements) and can according to statistical or inquires fees for each check list details.

CONCLUSION

Food quality inspection process, laboratory materials, sample be managed, to achieve the overall management of the food testing information (Bender and Derby, 2002). From fill a commissioned documents, followed by the distribution of food testing objects, costs, the project testing, detection of the report and audit, make a set of scientific management processes, confirm the duties of different positions on the staff, to strengthen the concept of staff rights and responsibilities, to achieve the purpose of scientific testing, quality inspection staff workflow management to ensure that food testing information completely.

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