

A preliminary study on the way of integrating legal education into laboratory safety education in colleges and universities

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Abstract: University laboratories play an indispensable role in talent cultivation and technological progress, and laboratory safety is particularly important as a necessary prerequisite for the smooth conduct of experiments. Laboratory safety education in universities is more about promoting and learning from the management systems developed by their own schools. The attention and importance of teachers and students are not high enough, resulting in poor effectiveness and difficulty. The relevant standards formulated by national or departmental laws and regulations are closely related to laboratory safety management. Integrating legal education into laboratory safety education in universities can not only improve the efficiency of laboratory safety management, but also enhance the awareness of law abiding and understanding among university students. Therefore, it is necessary to explore the integration path.

Keywords: University laboratory safety; Legal education; Laboratory safety education.

1. Introduction

In recent years, the country has increased its emphasis on laboratory safety in universities, and universities are actively exploring how to carry out laboratory safety education to fundamentally solve the difficulties of laboratory safety management. At present, laboratory safety education in domestic universities is mainly carried out through general education courses, knowledge lectures, manual distribution, and the development of rules and regulations. The content is also basically the same, and the study of existing national laws and regulations is ignored or applied less, resulting in the inability to effectively improve the laboratory safety awareness of university students and the difficulty in eliminating laboratory safety hazards. Law is a normative system established or recognized by the state and enforced by its coercive power, reflecting the will of the ruling class determined by specific material living conditions [1]. Law is the embodiment of the will of the ruling class. The laws of our country can be divided into: constitution, laws, administrative regulations, local regulations, autonomous regulations, and separate regulations. As of April 2023, there are currently 295 effective laws in China [2]

Exploring ways to integrate legal education into laboratory safety education in universities is a new approach to strengthening laboratory safety management. It can actively and effectively promote university students to comply with the school's laboratory safety management regulations and create a good laboratory safety culture atmosphere.

2. Current situation of laboratory safety education in universities

With the development of the internet era, the timeliness of information transmission has improved, and once security accidents occur in university laboratories, they will quickly spread. Safety accidents can cause property damage and casualties, especially the injuries and deaths of highly skilled talents, which undoubtedly have an extremely serious

negative impact on the development of the country and society. After analyzing the reasons for safety accidents in university laboratories, it is not difficult to find that a certain proportion of accidents occur due to students violating management regulations in experimental operations, which is also a reflection of the insufficient safety education in university laboratories. The importance of laboratory safety education varies among universities, and the vast majority of universities carry out safety education through training and distribution of promotional manuals. Such laboratory safety education is superficial and has little effect. Some universities have also established their own laboratory safety education curriculum system, but the curriculum mainly teaches knowledge such as "chemical safety, medical safety, mechanical safety, radiation safety, electrical safety, and fire safety", while the popularization of laws and regulations is relatively small or even lacking. National laws and regulations not only provide solutions for laboratory safety management in universities, but also limit the behavior and bottom line of activities of university students.

3. Analysis of current causes

3.1. The safety management department of university laboratories has a unclear understanding.

The establishment of the functional department for laboratory safety management in Chinese universities is relatively late, and neither universities nor vocational colleges have corresponding professional full-time training for laboratory safety management personnel. Teachers from other majors are "arranged" as laboratory safety management personnel. The laboratory safety management work in universities involves a wide range of aspects, and the management personnel lack experience in laboratory safety management, bear great pressure, and are tired of dealing with it, which will result in less time and energy sharing for laboratory safety education. Regarding laboratory safety

education, it is not possible to form a system and exists in a fragmented manner. Apart from general education at the school level, specialized and targeted laboratory safety education for secondary units is relatively rare.

3.2. College teachers and students are unclear about identifying violations and violations.

There are many legal provisions in our country, and the degree of popularization is relatively low. There is still a blind spot in timely popularizing the law among teachers and students in universities. The vast majority of teachers and students in universities subconsciously believe that there will be no illegal behavior in the school, and to the greatest extent, it is a violation of school rules and regulations. In fact, this is not the case. For laboratory safety, many provisions in the school's laboratory safety management regulations are formulated based on national laws, regulations, and rules. Violating the school's management regulations is an illegal act, and not only will it be punished by the school, but it will also be subject to legal sanctions.

3.3. The focus of laboratory safety education in universities is unclear.

The laboratory safety education in universities mainly focuses on "behavior" guidance, which is to guide students on what can be done and what cannot be done. In the school's publicity section, accidents are also reminded and taken as a warning. However, the proportion of publicity and learning about management regulations and systems is significantly lower, and the introduction and learning of national laws, regulations, and articles are even less.

4. Integrating legal education into laboratory safety education

Legal education is a standardized education for students, which enables them to understand and understand the law through legal education. The goal of legal education in universities is to cultivate students' legal literacy, enhance their legal awareness and ability to apply the law[3]. The laboratory safety education in universities involves a wide range of aspects and should run through the entire process of university education. To integrate legal education into laboratory safety education, universities need to actively explore relevant paths and methods.

4.1. Integrate legal education into teacher training.

As a university teacher, if one cannot master legal knowledge, let alone how to educate students to understand the law. Understanding the law among university teachers is a prerequisite for integrating legal education into the laboratory safety education system. Based on the inspection of environmental protection assistance and supervision conducted by the Sichuan Provincial Department of Ecology and Environment in universities in 2023, all 10 universities inspected have varying degrees of environmental violations. For universities, whether from school leaders or functional department managers, they will not intentionally violate the law, and the reason for this is the lack of knowledge in the Law of the People's Republic of China on the Prevention and Control of Solid Waste Pollution. For personnel in the laboratory safety management department, when conducting job training, not only safety related knowledge should be

trained, but also legal related knowledge should be trained.

4.2. Integrating legal education into curriculum teaching.

When implementing classroom teaching, teachers can consciously integrate relevant legal knowledge into classroom teaching, appropriately explore potential legal content in textbooks, timely and appropriately infiltrate relevant knowledge, and organically combine classroom teaching with legal education [4]. For example, when learning about the use of sulfuric acid, a case study was introduced: "In December 2021, a male student from a certain university in Guangdong threw sulfuric acid on his classmates due to conflicts and disputes, resulting in three female students being injured. The scene was quite tragic, with the victim's hair instantly melting off, her face and eyes severely corroded, and the entire classroom filled with screams." At the same time, the "Regulations on the Safety Management of Hazardous Chemicals" and "Regulations on the Management of Precursor Chemicals" were introduced, encourage students to discuss and analyze the regulations for the use and storage of precursor chemicals, master legal knowledge, and be aware of the serious consequences of improper management.

4.3. Integrate legal education into publicity and education.

Integrating legal education into the promotion, knowledge competition, and training of laboratory safety education. During the training, police officers from the local public security bureau or police station can be invited to the school for lectures, explaining which seemingly insignificant behaviors in the school may involve illegal activities. Add knowledge of laws and regulations to the exam questions in the knowledge competition. For example, our school uses the management regulations in laws and regulations such as the "Safety Production Law of the People's Republic of China", "Fire Protection Law of the People's Republic of China", and "Special Equipment Safety Law of the People's Republic of China" as the exam questions in the November Laboratory Safety Month event, to familiarize students with and learn relevant regulations.

4.4. Incorporate legal education into the revision of the system.

Based on the author's work experience, in laboratory safety inspections, students may consider violating the school's laboratory safety management regulations to be minor and insignificant. However, when explaining to them that such management regulations originate from the law and are "deemed illegal", students' attention level significantly increases.

There are many legal provisions related to laboratory safety, and most universities use these provisions as a reference when formulating rules and regulations. While it may seem like using the law, it actually reduces the effectiveness of this provision. When such provisions appear in a certain clause of the university's rules and regulations, students will feel that it is only a violation and not considered illegal. The recommended approach is to indicate the source of this provision and clearly indicate the administrative penalties that may be imposed if violated.

5. Conclusion

Law first and foremost refers to a code of conduct, so normativity is its primary characteristic. Integrating legal education into the laboratory safety education system of universities not only helps students establish a correct worldview, outlook on life, and values, but also effectively enhances their awareness of laboratory safety management and maintains the safety and stability of university campuses. Exploring how to integrate legal education into laboratory safety education from various aspects such as teacher training, classroom teaching, and publicity has good practical significance for laboratory safety management in universities. However, the author is only a preliminary exploration, and there is still a lot of work to be further promoted. We hope that colleagues from other universities can work together to study.

Acknowledgment

1) The construction of laboratory safety education system for college students under the educational concept of “Cultural man” (X2021JGYB107)

2) Construction of “Double first-class” laboratory safety education system in universities and colleges under the vision of ruling the country by law (2022KSZ99001)

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