

Discussion on the health problems of indoor living

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Abstract. This paper expounds the sources and hazards of indoor environment, and the relationship between indoor environment and housing health. The measures and methods to solve the problem are put forward, and green design and green building concept are advocated to reduce indoor pollution and make indoor life more comfortable.

1. The background of the problem

The issue of living and health issues is that with the development of society and civilization, the level of understanding of housing and the environment is also constantly improving. In the early housing construction, people recognized that the house was a place of life that humans used to prevent external factors such as wind, rain, cold, and humidity from adversely affecting them. From the perspective of the indoor environment at that time, they focused on indoor thermal environment, light environment, etc. With regard to improvement, we will strive to build a living space environment suitable for occupants.

The indoor environment is the most frequent environment for people to contact. People spend more than 80% of their time indoors. Indoor air quality is directly related to everyone's health. With the large changes in the structure of the building, the wide application of the new building materials, a variety of flavors in life, fragrance, cosmetics, deodorant into the family, resulting in the increasing number of harmful substances in the indoor air, so preventing indoor air pollution has become an important part of the indoor environmental protection.

The harmful and toxic air pollutants that exist in the room will have acute and chronic harm to the health of the human body. It can cause the diseases of the human respiratory system, the allergic disease, the toxic effect on the nervous system, and the carcinogenic effect. Therefore, the study of indoor environmental pollution conditions and causes will help prevent harmful substances from indoor harmful substances to human health, prevent the possible indoor environmental pollution and improve people's awareness of pollution prevention and prevention.

2. The analysis of the source and harm of indoor pollution

Living room is an important material condition of people's life. It is a place where people live, rest, work and meet. It is closely related to people's health. With the continuous improvement of the living standards of the people and the continuous improvement of the living environment, the use of improper building materials and indoor ornaments will inevitably cause indoor pollution. Air conditioners, microwave ovens, computers, refrigerators, induction cooker and TV sets have brought a series of health problems to people's comfortable living environment. In addition, the large use of chemicals such as pesticides and detergents can also cause environmental pollution, and most users lack health knowledge and pose a potential threat to the health of the human body. At present, the relationship between home environment and health has attracted worldwide attention.



2.1.Sources of pollution caused by decoration materials

As early as the late 70s of last century, scientists in some European countries began to study the problem of releasing toxic gases from modern building decoration materials. A series of diseases that affect the health of the human body caused by the use of toxic building materials in the world are called "bad buildings syndrome". After the pollution period of "coal smoke type" and "photochemical smog", the recent research has found that modern people are entering the third pollution period marked by "indoor air pollution".

As time goes on, the building decoration upsurge is higher than one wave, the new building materials with beautiful style, convenient use and low price, especially the synthetic building materials are constantly emerging, and the building materials, decoration and furniture market are uneven and the fish and dragon are mixed, and the indoor air pollution problem is inevitably produced. The quality of indoor air is closely related to our health. Science shows that there are more than 300 volatile organic compounds in the three major sources of pollution in architecture, decoration and furniture, of which the most important, most common, and most harmful pollutants are formaldehyde, VOC (benzene and homologues), ammonia, radon and stone itself. Sex. The damage of these 5 substances to human health can not be ignored. It is called the five "health killer".

Formaldehyde is recognized as a potential carcinogen in the world, including paint, foam filler, interior wall coating, plastic veneer, wallpaper, plywood, particleboard and other kinds of wood-based panels. Formaldehyde can be absorbed by the respiratory tract. Long term contact can cause cancer of the nasal cavity, mouth, throat, skin and digestive tract, and low dose contact can also cause chronic respiratory disease and pregnancy syndrome.

Ammonia is an alkaline volatile substance, which has a corrosive and stimulating effect on the contact tissue and attenuated the ability to resist disease. When the concentration is too high, it can also cause cardiac arrest and respiratory arrest through the reflex action of the trigeminal nerve endings.

Benzene is a strong carcinogen, mainly from paint and paint. It is colorless and is a liquid with special awn fragrance. Mild intoxication can cause lethargy, headache, dizziness, nausea and vomiting. Severe poisoning can lead to blurred sight, tremor, shallow and fast breathing, arrhythmia, convulsion and coma.

Radon is a colorless and odorless radioactive product, forming radiation after entering the human body. The incubation period of human body is relatively long, usually more than 15 years. There are two main sources of its origin: first, the radon in the soil rock is diffused upward, accumulates in the house after entering the building, and the two is the natural stone (marble, granite) and artificial stone (wall tile, ground tile, ceramic tile product) and cement and gypsum, especially stone containing radioactive elements. It is easy to release radon. It can not see or smell, but it is life-threatening for the human body. It is the second largest factor leading to lung cancer next to smoking. When radon is inhaled, it will decay and release alpha particles in the human body, producing heavy metal particles such as lead, bismuth and polonium, adhering to the trachea, alveoli or other tissues to form a lifetime radiation source. This is "internal radiation", which is more harmful than the "external radiation".

2.2.Radioactive pollution of electronic products

In addition to pollution caused by decorative materials, living environment also causes pollution caused by electronic products. The development of society and the progress of science and technology, all kinds of household appliances, office automation equipment, mobile communication equipment and so on quickly enter the office and family environment, improve the work efficiency of people, and enrich people's spiritual and material life. However, it follows that these high-tech electronic products will produce electromagnetic radiation in different degrees in the process of use, and become the pollution of the indoor environment after air pollution, radioactive pollution and noise pollution, "electromagnetic radiation pollution".

Electromagnetic radiation pollution, also known as electronic fog pollution, electromagnetic wave pollution, is electronic instruments, medical equipment, office automation equipment and color TV,

refrigerators, air conditioners, microwave ovens, computers and mobile phones and other household electrical appliances, various wavelengths and frequencies of electromagnetic waves. These electromagnetic waves are full of indoor space, colorless, tasteless and intangible, and can penetrate a variety of substances including the human body. If the human body is exposed to more than safe radiation doses for a long time, human cells will be killed or killed in large areas. It can also carry a large number of microbes and metamorphic particles of dust and is very easy to adsorb on human facial skin. Skin, which causes black spots, is called electromagnetic radiation pollution. In addition, high doses of electromagnetic radiation will also affect and destroy the original biological electric current and biological magnetic field of the human body, causing the original electromagnetic matter in the human body to be abnormal.

So far, research on electromagnetic radiation's harm to human body shows that the specific harms exist in six major aspects: one of the reasons for causing leukemia; Causing cancer and accelerating cancer cells' growth; impacting on the reproductive system; resulting in child's intelligence defect; affecting heart and blood system; having adverse effect on optical system.

3. Measures to improve environment

To improve the living environment and eliminate "the health killer" so as to guarantee people's health, appropriate measures can be taken according to the sources of environmental pollution to reduce the damage.

3.1. Advocating green living philosophy

Health awareness and values are being established with the social and economic development, people are getting more and more eager to have a healthy environment. We should prevent "the diseases of decoration, air conditioning and breath" during the period of constructing and dwelling, to putting the "city disease"-environmental degradation and pollution, under control. Aiming at establishing a new value of dwelling and health, we should work out countermeasures and solutions to realize the sustainable development of living environment and health.

Can the indoor environment be green? It should be green. It means a indoor environment which is pollution-free, sustainable and good for people's health. A natural life style has become our common concerns. The healthy dwelling should have two aspects : Green indoor environment and healthy ecological environment. By appropriately designing the structure and composition of buildings to make good use of natural energies like sunshine, natural wind and water; try to reduce energy consumption, appropriately use decoration materials, fully considerate the indoor capacity and ventilation to improve air quality; Use natural materials in designing and decorating to create a plain living environment; pay attention to plan of housing functions, building a multi-functional, green and health indoor ecological environment.

Health and green environment is not just a concept, it can be measured by quantitative data. A relatively ideal living environment shall be: radon concentration less than $100\text{Ba}/\text{m}^3$, radiation less than $110\text{nGy}/\text{h}$, formaldehyde content less than $0.08\text{mg}/\text{m}^3$; benzene content less than $0.087\text{mg}/\text{m}^3$; ammonia in less than $0.08\text{mg}/\text{m}^3$.

3.2. Strengthen the protection consciousness

Environmental pollution is a complicated and comprehensive problem, and indoor environmental problems is closely related to the people's health. How to avoid carcinogenic substance " --the health the killer ", in decoration? The key is giving no entry to the products exceeding the standard. Full use of indoor space and health problems shall be considered in decoration and ornament design; capacity and ventilation shall be taken into consideration to improve air quality; decoration materials shall be collected of reasonable match; use new, nontoxic or less toxic, pollution-free decoration materials; After purchasing a new house or a house with new furniture and adornment, you shall have the house checked by department of environmental testing first then chose an appropriate time to move in, choose suitable and effectively indoor air purify facilities, pay attention to air flow; home appliances

shall not be placed too concentrated so as not to put yourself exposed to excessive radiation, and ensure safety distance and using time.

3.3.Strengthening the consciousness of self protection

Green materials are materials that minimize the load on the earth's environment and benefit human health in such links as raw materials, product manufacturing, use or recycling, and waste disposal. Our country also needs to do a lot of practical work in improving the product certification and marking management related to the indoor environment quality, promoting the design of green building and the development of green materials. For example, the development of green and environmental building decoration materials, including reducing the content of formaldehyde, benzene, oxygen and other harmful substances in construction and decoration materials such as solvents, adhesives, coatings and artificial plates, restraining the release of harmful substances, reaching the goal of pollution-free, non radioactive, conducive to environmental protection and human health.

Through efforts, the indoor air quality standard system in China has basically taken shape. However, in the process of making the IAQ standard, there is a lack of certain basic data, which are mainly manifested in such parameters as the release of harmful substances, the years of release of harmful substances in the building and decoration materials, and the relationship between each other, and the large-scale investigation of the basic toxicological data of the pollutants, the pollution situation, the content of the harmful substances and the technological level of the products. At present, there are no relevant standards for residential ventilation at home, only the minimum area of doors and windows in the GB50096-1999, as well as the basic requirements related to ventilation, such as the vertical air duct which can be connected with the local exhaust device in the kitchen and the toilet. Therefore, there is no specific guidance from architectural design, ventilation product development to the reasonable ventilation of occupants.

We should learn the common knowledge of preventing and controlling indoor pollution. The competent departments and the media should actively popularize the knowledge of air pollution caused by indoor decoration and decoration, make people choose the simple decoration, green decoration, and understand the effective methods of reducing indoor pollution after the decoration, and learn to protect themselves with relevant legal means.

4. Conclusion

Environmental pollution is a complex and comprehensive problem, which mainly strengthens the individual's self-protection consciousness and consciously resists the purchase of unqualified products exceeding standard. How can we avoid "introducing the wolf into the room" when decorating, and away from these toxic carcinogens known as "healthy killers"? Blocking the source of poison is the key to not allowing limited products to enter the home. The design of decoration and decoration should take into account the comprehensive utilization of indoor space and the problems of health and environmental protection, take full consideration of the load and ventilation of the interior, improve the indoor air quality, rationally match the decorative materials, and choose the environmentally friendly and safe materials with non-toxic, less toxic, pollution-free and less pollution, and have small dependence on resources. Material; after buying new houses, furniture and decorating new houses, don't stay in a hurry, find the indoor environment inspection department, listen to the opinion of the experts, choose the appropriate time to stay, choose the suitable indoor air purification facilities, pay attention to the ventilation and ventilation; do not put the household electricity in too concentrated, so as not to make yourself When exposed to the danger of over radiation, appliances should not be concentrated in the bedroom and ensure proper use of safe distance and time.

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