

## HOW CASH RECEIPTS AFFECT HUMAN HEALTH AND THE ENVIRONMENT

**Kirilenko A.M.**, *kirilenkonastia@gmail.com*

*Dmytro Motornyi Tavria State Agrotechnological University*

Almost every day we are in contact with cashier's checks, but few people know what impact they can have on human health and the state of the environment in general. According to the results of a study of scientists, holding a cash register in their hands, bisphenol-A substance enters the body through the skin. It also enters the body after interacting with printed documents, faxes, etc.

The purpose of the study is to find out what effect cash receipts have on the human body and the environment and to find ways to solve the problem of recycling receipt tape.

Thermal paper contains a certain amount of a dangerous substance called Bisphenol A. It is enough to hold the check in your hands for five seconds for 1  $\mu\text{g}$  of this toxin to penetrate the skin. The dose will increase tenfold if you have wet hands or the piece of paper itself gets wet. Bisphenol A is found in polymeric materials that are used for the production of a wide range of products: children's toys, plastic containers, inner coatings of metal cans for food and drinks. Bisphenol A enters the human body mainly through the gastrointestinal tract and skin; it can be found in various biological fluids and tissues of the body, showing varying degrees of accumulation in them (fig.1).

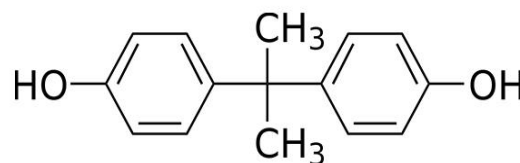


Figure 1. Chemical formula of Bisphenol A

Studies of the content of Bisphenol-A in the human body were carried out in England and showed that in 90% of the population, the chemical is found in urine. Also, scientists have found that a moisturizing cosmetic cream applied to the skin promotes the penetration of bisphenol-A into the blood [1].

Bisphenol A is classified in the EU as a substance that causes toxic effects on our ability to reproduce (Repr. 1B); may cause respiratory irritation (STOT SE 3); causes serious eye damage (eye dam. 1); may cause skin allergies (skin sens. 1) [3]. If you touch more than ten checks a day, the dose of toxin you received is 71 mcg / day.

It turned out that in its structure it is similar to the female hormone estrogen, therefore Bisphenol-A molecules affect the reproductive system, leading to reproductive disorders, as well as cancer and damage to brain cells. It can provoke cancer - cancer of the prostate, testicles, mammary glands. There are studies proving that Bisphenol-A leads to delayed brain development, autism, diabetes, obesity, and cardiovascular disease [2].

It is noted that Bisphenol-A is harmful even in small amounts. About 3 million tons of this substance are synthesized annually in the world.

Also, checks harm not only humans, but also nature, since thermal paper is not accepted for processing due to the content of toxins. Scientists are now developing eco-friendly and harmless alternatives to checks and thermal paper, but the replacement process cannot be quick. Therefore, environmental experts recommend, if possible, to abandon checks or replace them with electronic ones.

### References

1. About Bisphenol A: website. URL: <http://www.bisphenol-a.org/about/index.html> (Last accessed: 13.11.2020).
2. Degradation of Bisphenol A in Natural Waters. Dorn, P.B. et al. 1987. Chemosphere. 16(7): 1501-1507.
3. Bisphenol A: website. URL: <http://www.bisphenol-a.org/about/index.html> (Last accessed: 15.11.2020).

*VIII Всеукраїнська науково-технічна конференція магістрантів і студентів ТДАТУ. Навчально-науковий інститут загальноуніверситетської підготовки: матеріали VIII Всеукр. наук.-техн. конф., 1-18 листопада 2020 р. Мелітополь: ТДАТУ, 2020.*

**Language adviser:** *Suprun O.M., Senior Teacher of the Department of Foreign Languages, Dmytro Motornyi Tavria State Agrotechnological University*