Issues raised by pesticides and the ways of solving them

Student A

Astana IT University

IT-1901

English for Academic Purposes

Instructor’s name

**Essay outline**

**Topic:** Issues raised by pesticides and the ways of solving them

**Introduction. Background:** Pesticides are chemical compounds that are used to protect farms and prevent viruses from spreading. This essay will be about the problems pesticides cause and solutions to them.

**Body paragraphs**

**Paragraph 1:**

**Topic sentence:** Pesticides cause potential threats to a human’s health.

**Supporting points:**

1. Deaths and chronic diseases due to pesticide poisoning (Aktar et al., 2009);
2. Harmful for unborn babies or breast-fed infants, etc.
3. Effects on the nervous, reproductive, endocrine systems (Jakuboski, 2011);

**Paragraph 2:**

**Topic sentence:** In addition, the use of pesticides leads to a loss of biodiversity.

**Supporting points:**

1. Impact of pesticides on birds (Isenring, 2010);
2. Effects on mammals, aquatic species (Isenring, 2010);
3. Risks to butterflies, bees, and other natural enemies (“Pesticides reduce biodiversity”, 2010);
4. Impact on plant communities.

**Paragraph 3:**

**Topic sentence:** They possess harmful implications on the planet’s ecosystem.

**Supporting points:**

1. Disrupting the soil ecosystem (Gill & Garg, 2014).
2. Impact on water and air ecosystems, etc. (Mahmood et al., 2016).

**Paragraph 4:**

**Topic sentence:** In preventing health risks presented by pesticides it would be best to be aware of safety tips.

**Supporting points:**

1. Learning about the first-aid;
2. Being familiar with labeling and protective equipment, etc. (WHO, 2001).

**Evaluation:**

1. The presence of factors that are hard to be controlled;
2. No guarantee for the equal distribution of the information;

**Paragraph 5:**

**Topic sentence:** In the case of biodiversity, including specific regulations and policies on biodiversity conservation should play a vital role in this area.

**Supporting points:**

1. The Convention on Biological Diversity;
2. The UK Biodiversity Action Plan (Isenring, 2010);
3. Other activities of environmental programs, etc.

**Evaluation:**

1. Hard regulation and testing of governmental policies for the effectiveness;

**Paragraph 6:**

**Topic sentence:** In order to tackle the issues of the topic, it is best to use natural alternatives for pesticides.

**Supporting points:**

1. Various examples for biopesticides, alternative methods to cope with pests, etc. (Aranha, 2017);

**Evaluation:**

1. The need for further research to test their effectiveness;

**Conclusion**

**References**

**Issues raised by pesticides and the ways of solving them**

When we go grocery shopping, we usually find ourselves picking some vegetables, fruits, and grains, not even having a thought about how they were produced. In the history of agriculture, it was necessary to protect crops from damages and diseases ever since the first cultivation. Thus, to maintain food security and high production, the so-called “pesticides” were in the active use. According to World Health Organization (WHO), pesticides are chemical compounds that kill or repel pests (any unwanted insects, plants, and fungi) by protecting farm crops and preventing some viruses from spreading. From the very first use of synthetic pesticides that was started in 1940s (WHO, 2008), overall consumption has increased worldwide. Up today it is known that pesticides can add up to the environment and build up in the food chain. For that reason, the use of pesticides poses some significant issues both on humans and other living species, as well as on the entire ecosystem. However, there are several possible solutions to tackle these problems as they will be stated later in this essay.

Among the issues caused by pesticides the one that concerns us the most is the direct effect on humans. By numerous studies it was evident that pesticides cause potential threats to a human’s health. The number of pesticide poisoning that leads to deaths and chronic diseases world-wide is about 1 million annually (Aktar et al., 2009). In fact, experiencing the harm from pesticides depends on the actual dose as with any other chemicals, the amount of exposure to them, and people’s age, health situation, etc. Therefore, farm workers, rural residents living next to farms, pregnant women, children and people who interact with pesticides more often have higher risks in getting diseases than others. People can be exposed to hazardous effects of pesticides through inhalation, oral (e.g. eating or drinking) and dermal contacts. There has been a direct correlation between pesticides and the types of diseases, such as cancer, ADHD (Attention deficit hyperactivity disorder), Alzheimer’s Disease, birth defects, and more after conducting countless research works. Also, the use of pesticides has harmful consequences on the nervous, reproductive, and endocrine systems (Jakuboski, 2011). Pesticides do pose risks related with health concerns that shouldn’t be neglected.

In addition, the use of pesticides leads to a loss of biodiversity. Diversification of animals and plants plays a vital role in terms of the functionality of ecosystems on a global scale. It provides stability, balance, productivity, and resilience, ensuring more harmonized habitat for all species. And humans are part of this habitat, meaning the loss of biodiversity will adversely affect on the whole world, including us in the first place. As for the first impact on biodiversity, pesticides have negative implications on birds, reducing their overall population and the number of insects which play a source of food for birds. Secondly, pesticides have caused population declines in mammals. It was discovered by examining Britain’s wild mammals, in which mostly bats and rodents, also 38% of species went through the negative effects of pesticides (Isenring, 2010). Thirdly, pesticides harm pollinators, spiders, and beetles. In comparison with pesticide treated fields, it was found that the numbers of beetles, bugs, and other such beneficial insects were much higher in organic farms. Also, they accelerate the rate of extinction of one-third of 6000 amphibian species that are already under threat (“Pesticides reduce biodiversity”, 2010). They disrupt the nervous system of aquatic species that in turn alter their behavior. Lastly, in organic fields there were twice as many plant communities and a weed cover twice as large in comparison with treated fields. All of the above examples indicate that pesticides harm and disrupt the environment’s biodiversity.

On top of that, pesticides possess harmful implications on the planet’s ecosystem as a whole. They enter the natural ecosystems by variety of ways depending on their solubility. Considering the matters regarding the soil ecosystem, when pesticides reach the soil, they can alter the soil structure and its microbial diversity, including the biomass. For example, one of the types of pesticides – herbicides were estimated to reduce the presence of the bacteria named *Pseudomonas*, which is known to play a vital role in maintaining the soil fertility (Gill & Garg, 2014). With water pesticides interact when they move from agricultural fields to water basins by runoff or rain, after which they get dissolved and enter rivers and lakes, thus covering more and more areas. As a result, they contaminate water and aquatic species, resulting in the disruption of the natural balance. The presence of pesticides in the air is caused by their aerial application, spraying methods, and other numerous factors (Mahmood et al., 2016). Pesticides build up in the air, then travel to distant areas through the wind. It is reported to negatively affect animals, people, and other species, because toxic chemicals contained in pesticides enter through inhalation. It is concluded that pesticides harm the whole environment.

As a solution to the first mentioned issue, in preventing health risks presented by pesticides it would be best to be aware of some general safety tips. The first and foremost is carefully reading the product label, because labels contain information about the safe use and the storage of the pesticides, their toxicity level, and instructions on further actions in case of accidents. In addition, it is recommended to know how to give the first aid for people poisoned by pesticides. For example, calling immediately the ambulance, placing a patient to an uncontaminated and ventilated area, if you are giving the first aid remembering to wear gloves and avoiding self-contamination, if a patient’s breathing is hard then turning his/her head upwards, etc. Personal protective equipment is also considered to be an important safety tip. Wearing protective gloves, clothes, footwear, protecting your head, face, and eyes will prevent from harmful consequences mainly caused by pesticides (WHO, 2001). However, there are plenty factors to cause poisoning, e.g. accident spillage, improper application, mixing and spraying, adverse weather conditions, etc. that can be hard to tackle. Also, there is no guarantee for the equal distribution of the information regarding safety. In that case, it will be advantageous to include some training programs for people in the agriculture sector, or to make it more public spreading the information through mass media.

In the case of biodiversity, including specific regulations and policies on biodiversity conservation should play a vital role in this area. For example, at a national level The Convention on Biological Diversity provides common strategies and action plans for the regulation of the issues related with conservation. As a demonstration, the UK Biodiversity Action Plan (BAP) currently has 1,150 species and 65 habitats listed by a priority for conservation. Thus, adverse consequences regarding animal extinction can be avoided. One of the examples of the policy is that in the EU payments are provided to farmers who keep safety measures to not damage the nearby area and environment (Isenring, 2010). This will give additional motivation for farmers and decrease the overall harm done to the environment. It should also be encouraged to include in national policies to practice more better and ecologically safe agricultural methods. On the other hand, regular reports should be released on the mentioned policies to analyze their effectiveness on the biodiversity. It might be hard to regulate programs and policies ensured by governments, that is why it would be beneficial if there were more programs on pest management by non-profit organizations, or local communities.

In order to tackle the issues of the topic, it is best to use natural alternatives for pesticides or find new ways to fight with pests. Several innovative farming techniques are used across the globe that do not require the use of chemical pesticides. Such ways are crop rotation, intercropping, maintaining crop diversity, using organic pesticides, etc. These alternatives can help with the hazardous consequences caused by traditional pesticides, offering accessible and safe techniques that would be advantageous for the environment and its habitants as a whole (Aranha, 2017). However, further research is needed to evaluate the safety and effectiveness of the mentioned pest management alternatives. For example, organic pesticides are generally believed to be safer and more natural, but some researchers claim that they can be more harmful than their traditional counterparts. As other methods are not widespread among farmers, their effectiveness is also under the question. Thus, provided alternative methods should be thoroughly investigated for the effectiveness and safety. In the near future, other more methods could be generated with by far greater opportunities.

In summary, the use of pesticides in general has serious consequences both on living beings and the entire ecosystem. Issues derived from pesticides mainly cover areas, such as health, biodiversity, and environment. Some possible solutions include maintaining safety instructions for those who interact with pesticides the most, having specific policies and programs regarding biodiversity conservation, and replacing pesticides with their natural alternatives or find methods other than using pesticides to tackle with pests. The general effectiveness of the proposed solutions still needs a further research to assess, as there are some limitations in each of the solutions. Society as a whole should be aware of the issues caused by pesticides and take some steps to prevent them, working collaboratively with authorities.

References

Aranha, J. (2017). *5 innovative ways for farmers to fight pests without using any chemicals.* The Better India. <https://www.thebetterindia.com/120349/innovative-ways-pests-farmers/>

Gill, H.K., & Garg, H. (2014). Pesticides: Environmental Impacts and Management Strategies. In Soloneski, S. (Ed.), *Pesticides.Toxic Aspects.* InTech Publisher.<https://www.intechopen.com/books/pesticides-toxic-aspects/pesticides-environmental-impacts-and-management-strategies>

Mahmood, I., Imadi, S.R., Shazadi, K., Gul, A., & Hakeem, K.R.(2016). *Effects of pesticides on environment.* Switzerland: Springer International Publishing

Isenring, R. (2010). Pesticides and the loss of biodiversity. *Pesticide Action Network Europe.* London

Jakuboski, S. (2011, July 25). *The dangers of pesticides.* Scitable. <https://www.nature.com/scitable/blog/green-science/the_dangers_of_pesticides/>

Aktar, M.W., Sengupta, D., & Chowdhury, A. (2009). Impact of pesticides use in agriculture: their benefits and hazards. *Interdisciplinary Toxicology,* *2*(1) p. 5-6. <https://doi.org/10.2478/v10102-009-0001-7>

*Pesticides reduce biodiversity*. (2010). Semantic Scholar. Retrieved February 10, 2019, from <https://pdfs.semanticscholar.org/a08e/00c4714e48e66d6de4e01b9ee5a78fb8d1f5.pdf>

World Health Organization. (2001). *Preventing health risks from the use of pesticides in agriculture*.<https://www.who.int/occupational_health/publications/en/oehpesticides.pdf>

World Health Organization. (2008). *Pesticides. Children’s health and the environment.* <https://www.who.int/ceh/capacity/Pesticides.pdf>