**Chemistry and Sustainability - The DDT dilemma**

24 Years ago

Your name is Bukunmi, and you live in the poor town of Wawa in Nigeria, Western Africa. You are the eldest son in a family of four children. You are 16 years old. Nigeria has a vast array of lakes, rivers and wetlands which allow mosquito populations to grow to large numbers. In the large cities the local governments with large budgets are able to do controlled spraying against the mosquitos using DDT. Your township is based around two lakes which are not sprayed because your people don’t have the money to buy the insecticide. The township is ravaged by mosquitos all the time.

One day your younger brother, Adhi, who is14 years old, starts to develop flu-like symptoms. You notice that your neighbour’s child, Bukhi, and one of your friends from school have these symptoms as well. About one week later the doctors are in town - just for one day. They usually get to see about 300 people on this day and on some days up to 100 people spend the whole day waiting without getting to see the doctors. The doctors come every four weeks to the township. Your parents would like to take your brother to the doctors but can’t afford to lose a day’s income with 6 mouths to feed. You offer to take him but the doctors are too busy and your brother is not seen that day. Your brother’s symptoms are getting worse. He now has diarrhoea, nausea, constant headaches and has lost a considerable amount of weight. You and your parents are getting concerned. It becomes obvious that someone will have to take him to the capital city of Abuja. The cost of the bus fare for two people to go to Abuja is equivalent to one week’s income for your father. If your parents can’t work then your family will go hungry for a week. You offer to take Adhi to Abuja.

On arrival you find the hospital is overflowing with sick people, especially children, suffering from yellow fever, malnutrition, tuberculosis, polio and measles. People are dying at a rate of 100 per day in the hospital. Your brother continues to get sicker and sicker over the following days. Doctors determine that he has malaria but unfortunately their diagnosis comes too late for him: he succumbs to the disease and passes away before he can receive effective treatment. This sad ending leaves you with a determination to one day in the future help and support people suffering from malaria. You learn that some towns are spraying DDT and you only wish your town would have access to DDT like other places. You are convinced that if Wawa had been able to afford DDT your brother would still be alive now.

You are a very successful student and have received scholarships from the government which have enabled you to continue going to school. You get sent away to Abuja to finish high school. Eventually you take up a job at a telecommunications company. You’re intelligent and have good communication skills and soon get promoted. But you decide that you need to continue studying to advance your career.

By now the Nigerian government is starting to implement reforms to tackle basic needs of communities such as lack of freshwater for household use, irrigation for food crops, unreliable power supplies, difficulties with establishing small businesses and corruption. Over the following years you work for the government helping to implement the reforms. You learn from your mother that DDT has been sent to Wawa by the government due to the many malaria deaths. She says that everybody in Wawa is so happy about how effective DDT is against the mosquitos. But when you visit home after a long, long time you notice how quiet everything has become – no birdsongs, no birds around the lakes, no fish in the lakes. People in Wawa now say it is too quiet but they are not sure if DDT is to blame! Your travels around the country make you realise that DDT has a negative impact on local environments. You are confused.

Organise groups of three.

*You think of your brother Adhi and how he would still be alive if you had already had DDT in your town. You think of the birds and the fish in the lakes.*

Is it okay for the people in Wawa to continue using DDT if it seems to save so many people’s lives but if, on the other hand, it also seems to kill birds and fish?

24 Years Later

You are now 40 years old. You live in the capital city of Abudja in Nigeria, Western Africa. You work for the United Nations. More specifically you work for the World Health Organisation (WHO). Getting this job means a lot to you since you feel you can actively help people suffering from malaria in your country where it is a widespread problem. The WHO is investigating the huge health problems across Africa - one focus is the increasing impact of malaria throughout Africa. In its latest (2008) estimate the WHO has concluded that around 881,000 people died worldwide from malaria in 2006, and that around 91% of those who died were children in Africa.

Recently your WHO committee was approached by some other African countries, which are also amongst the poorest countries in the world, to provide immediate funding to treat the worst of the Malaria infected areas with DDT.

You know that DDT has a bad reputation for negative, long-term environmental impact. Although it was commonly used for a long time, it is now regarded as one of the most dangerous chemical substances and bans are in place in many countries. Your team is aware that the United Nations Environment Program (UNEP) is working to prevent the use of DDT. The “green lobby” within this group argues that DDT must be banned worldwide by 2012 as the harm to the environment is clearly documented beyond any doubt. They also claim that there are alternatives to DDT, although they acknowledge that they are not as effective.

On the other hand, the WHO delegates from the poorest African countries wish to use DDT even though they acknowledge that DDT is a nasty chemical. Although their countries have tried a variety of insecticides, as well as a number of non-chemical alternatives such as bed nets and swamp draining, they have been unable to control the spread of malaria. They argue that failing to use DDT will sentence millions of their people, many of them children, to misery and death. They also argue that the economic consequence of having so many sick people means that their countries will remain poor and unproductive.

Get organised in pairs. At first consider for yourself:

You are Bukunmi working for the WHO, and you have to help decide if the poorest countries in the world should be allowed to use DDT given the difficult situation with malaria in their countries, even if it has been banned elsewhere.

1. For yourself, consider if it is ok to knowingly harm the environment of these countries by using DDT if the health of many people is likely to be put in danger?
2. For yourself, consider if it is ok to harm the environment by using DDT to eliminate malaria if the economy of these countries - people getting even poorer - is likely to suffer through the impact of the disease?

Discuss with your partner and explain the reasons for your decisions!

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| *Read the discussion paper prepared for your committee and complete these tasks:*   1. *You are a WHO committee member who needs to make this important decision about the use of DDT to control Malaria. To help organize your thoughts for the meeting, arrange the main points into the positives of using DDT, negatives of using DDT, and points for which you would need further information or research (interesting)- using the PMI (Plus, Minus, Interesting) chart. The table looks like this.*  |  |  |  | | --- | --- | --- | | **Plus** | **Minus** | **Interesting** | |  |  |  |  1. *Using your table to guide your discussion meet with your two WHO colleagues to prepare a final recommendation? Do you have any provisos or guidelines that go along with your recommendation? If so then explain why you want to have them included.* 2. *You will next be taking part in an activity to share your opinions with the whole class.* |