

**DDT & Malaria Control: Past, Present, & Future – Dr. Donald Roberts (University of the Health Sciences, Bethesda)**

- a) Value of advocacy
  - i) Use of insecticides in disease control programs
  - ii) Especially for malaria control
  - iii) Opposition is not limited to the use of DDT
  - iv) Success: DDT is still available for malaria control for indoor residual spraying (IRS)
  - v) WHO, USAID, others now support use of insecticides for malaria control
- b) Examples of IRS successes
  - i) Prespray
    - (1) Swaziland –
      - (a) Ongoing spray program
      - (b) 2 to 8% infection rates
    - (2) Mozambique – no spray program
      - (a) Children – 64%
      - (b) Adults – 30%
  - ii) Postspray
    - (1) Swaziland – dropped to 0.25%
    - (2) Mozambique
      - (a) 2001: dropped to 38%
      - (b) 2002: dropped to 22%
- c) Why the opposition
  - i) Set of beliefs held by environmental groups
  - ii) DDT used from mid-1940s to 1970s
  - iii) Malaria control
    - (1) IRS
    - (2) No known environmental impacts
  - iv) *Ae aegypti* eradication program
    - (1) Perifocal spraying outside houses
    - (2) No known environmental impact
  - v) For malaria –
    - (1) Reductions in parasite rate due to spraying were very high
    - (2) Reduction in deaths was also high
  - vi) 1995 – global malaria eradication program based in IRS with DDT
  - vii) By 1969, nearly 40% of exposed population was free of malaria
- d) Tipping point
  - i) Behavior change on a large scale
  - ii) Collected information causes public opinion norm to shift
  - iii) Silent Spring – Rachel Carson
    - (1) Launched modern environmental movement
    - (2) Treatise on fear – natural world had no way to deal with man-made chemicals
- e) Reality
  - i) Plenty of natural chemicals behave in similar ways to DDT
  - ii) Natural world has a variety of mechanisms for dealing with DDT-like chemicals
- f) Focus has remained on DDT
  - i) Ignored other, sometimes more toxic chemicals
  - ii) Some of these were natural chemicals
- g) Claims against DDT

- i) Robins being pushed to the brink of extinction – robins were actually increasing in number
- ii) Bermuda petrel endangered due to DDT –
  - (1) Had been thought extinct before the use of DDT
  - (2) True problem was loss of habitat
- iii) Bald eagles and DDT
  - (1) Bald eagle was truly endangered
  - (2) Eagle protection Act – 1940
  - (3) 1940-45: bald eagle populations recovering
  - (4) 1945
    - (a) DDT use began
    - (b) Number of juvenile bald eagles declined
  - (5) 1972
    - (a) DDT banned
    - (b) Bald eagle populations rebounded
  - (6) Proposed issue – eggshell thinning due to DDT
  - (7) True story
    - (a) Before DDT
      - (i) Bald eagles eliminated by hunting, trapping, and poisoning
      - (ii) Golden eagles were not covered by the Bald Eagle Protection Act
      - (iii) Juvenile bald eagles not easily distinguished from Golden eagle
      - (iv) Eagle protection act amended in 1962 to include juveniles
      - (v) Eagle populations began increasing
    - (b) Millions of dollars became available to bald eagle recovery due to the endangered species act in 1973
    - (c) DDT does cause eggshell thinning, but it was not the real cause of bald eagle reduction, nor was its banning the reason for their recovery
- iv) Change is occurring in the interpretation of data associated with DDT
- h) 1960s – rapid growth of the environmental movement/advocacy groups began
- i) Concurrently, malaria programs began to be phased out
  - i) Due to lack of funding
  - ii) Change of strategy
    - (1) De-emphasize IRS
    - (2) Promote use of drugs
- j) Impact on the poor
  - i) IRS program – malaria rates low
  - ii) Remove IRS program – malaria increases exponentially
- k) Advocacy for IRS programs helps
  - i) Propaganda war continues
  - ii) Need to lobby for public health use of pesticides and spatial repellents
  - iii) Always provide accurate and true information
- l) NEED TO USE ALL AVAILABLE TOOLS