

been recognized as an air toxics problem for many years. Thus, in 1983 the California legislature has passed the Toxic Air Contaminant (TAC) Act to protect public health from toxic airborne pollutants, including pesticides.

Regulations in California also state that no pesticide application should be made or continued if there is possibility of any contamination of people not involved in the application process; or damage to non-target crops, animals, or other public or private property; or contamination of non-target property, or creation of a health hazard preventing normal use of such property<sup>4</sup>.

## bantay kinaiyahan



### Only FPA-registered fungicides are used to control banana leaf disease; no banned fungicides are applied contrary to reports by local environmentalists. Fungicides undergo thorough testing before being registered with the FPA.

- Having a license to be marketed in the country does not remove the fact that fungicides are toxic chemicals that are designed to kill.
- Registration will not erase the fact that:
  - Dithane (Mancozeb), the common fungicide used in aerial spraying, is a cancer-causing chemical because of its metabolite ethylenethiourea (ETU).<sup>5</sup>
  - ETU is an acknowledged goitrogen (thyroid toxin), teratogen (causes birth defects) and oncogen (causes tumors). These effects were observed in long-term, low-dose exposure studies of test animals.<sup>6</sup> The previous Bantay Kinaiyahan issue on "The Story of Toxic Shower" has listed the different fungicides being used by banana companies in Davao and their documented adverse effects.
- Despite the "stringent" data evaluation for pesticides there are deficiencies in its current testing protocols. The following were noted in the current testing protocols in US<sup>7</sup>
  1. Current tests do not require chemicals to be tested at low dose pulse exposure. Pulse doses of low levels of pesticides at critical times when developmental windows are open and body defenses are unable to respond may lead to permanent changes in the fetus;
  2. Toxicological tests have typically focused on cancer and mutation end points and have not looked at other critical concerns such as endocrine and immune system effects that can occur;
  3. Standard toxicological tests only evaluate one route of exposure at a time, rather than all possible routes;
  4. Most testing is done with pure forms of pesticidal active ingredients rather than with commercial formulations. There are three types of chemicals missing from most testing protocols: i.e. contaminants of manufacturing processes; toxic waste deliberately added from chemical reactor cleaning processes and inert "ingredients" ;
  5. Current testing requirements do not evaluate exposure effects from chemical mixtures, which is often the case in the real world – we are exposed to a mixture of different pesticides;
  6. Laboratory animals generally live in an environment where climate, nutrition and disease are carefully controlled. When additional stresses are present, toxic responses to registered chemicals occur that may not appear under current standard testing procedures.
- The data that serve as basis for the evaluation and decision of FPA came from the manufacturers themselves - that focus on its effectivity on the target pests but not on their side effects to the environment and non-target organisms.
- FPA admits that due to its lack of personnel, the use of FPA registered fungicides are not actually checked by FPA on the ground.



### FPA-registered fungicides for the control of banana leaf disease are applied at low-dosage rates ranging from 0.1 li/ha (Tilt 250 EC) to 1.5li/ha (Dithane 600 OS) - the mixture is mostly water 75-82%.

- Consider this :
  - For Tilt 250 EC  
1.1 - li/ha applied  
X 1000 – assumed hectares of banana plantation being aerially sprayed in Davao City  
100 - li of Tilt 250 EC is applied in a 1000 hectare area per application.
  - For Dithane 600 OS  
1.5 – li/ha x1000 (has.) = 1500 liters of dithane over a thousand hectares. It shall be noted that mancozeb has a half-life of 4-8 weeks!<sup>8</sup> . Before it is totally degraded, another dose is being poured given that aerial spraying is normally done twice a month.
- Question: How many kinds of fungicides are there in the mixture?



● If the mixture was too diluted, after it dries up one should not be able to see much powdery residue on the leaves of crops hit by aerial spray because water evaporates. But in reality one can see with naked eyes the powdery residue on the leaves hit by aerial spray which only shows that the water was not enough to fully dissolve the chemicals or in short - the mixture is a bit concentrated and not really too diluted (mostly water) as claimed by the company. This is just one of the complaints of the communities affected because they can no longer eat their home-grown vegetables such as *malunggay*, *alugbati*, *saluyot* and *tinangkong* – these are the most readily available free and nutritious food in the community.



### Fungicides which are used in banana plantations are of low to very low order of mammalian toxicity, classified under FPA's least hazardous Category (Category No. 4) and if applied at recommended rates and in accordance with correct prescribed application procedures are safe to human and to environment.

- Such statements are designed to deceive people into believing that pesticides are safe. In fact, the classification of toxicity is based on the acute effects or the immediate effects right after exposure. It does not consider the long-term effects of low-dose exposure to chemicals.
- Fungicides may have low mammalian acute toxicity but what about their chronic effects to humans? Prolonged exposure to some chemicals can cause cancer, like the case of fungicides - mancozeb, chlorothalonil, tridemorph, and propiconazole<sup>9</sup> Repeated or chronic exposure to high doses of Mancozeb can cause thyroid and liver tumors, hindleg paralysis and retinal degeneration of laboratory animals<sup>10</sup>.
- But what about fungicides' toxicity on other organisms such as fish? Many depend on fish for livelihood and for food. The list of commonly used FPA-registered fungicides<sup>11</sup> includes chlorothalonil, propiconazole, mancozeb all are known to be highly toxic to aquatic organisms. Chlorothalonil is not only highly toxic but it also bioconcentrate in fish<sup>12</sup>, and concentrations as low as 2 parts per billion can cause gill damage and anemia. It is also toxic to shrimp, frogs, beneficial microorganisms, and earthworms. In plants it causes a variety of effects, including reductions in yield<sup>13</sup>.
- Fewer than 10% of products list any inert ingredients on their labels. More than 200 chemicals used as inerts are actually identified air and water pollutants, and some 400 inert chemicals are actually used as active ingredients in other pesticide products<sup>14</sup>.
- Between 1994 and 1996 the USEPA documented 13 significant fish kill incidents due to profenofos, an insecticide. What is worth noting is that there are no reports of misuse of profenofos with any of the fish kill incidents. The prescribed use of the chemical was followed yet it resulted to fish kill. Therefore, there is no guarantee that if pesticides are applied at recommended rates and in accordance with correct prescribed application procedures they are safe to human and to environment.



### There are no real reasonable pressing needs to ban aerial spraying.

- There are people living within and around the banana plantations who are directly affected by aerial spraying because a predictable percentage of spray drift can reach up to 2 miles (3.2 kms) or more miles from the treatment site according to a 1994 report from the US Environmental Protection Agency Ecological Effects Branch<sup>15</sup>. The two most common sources of exposure leading to pesticide related illnesses are drift from pesticide spraying (44%) and field residues (33%).<sup>16</sup>
- The Mamamayan Ayaw sa Aerial Spray has documented 182 victims of aerial spray, where 85% complained of health-related problems such as skin rashes, respiratory problems and burning sensation in the eyes every time they are hit by pesticide drift. Some suffered diseases that match the documented health side effects of mancozeb such as goiter, blindness and hind leg paralysis. The victims complained also of inhaling pungent odor of the chemicals every time banana companies spray and that they cannot use anymore rainwater for drinking and cooking. Now they have to walk farther just to get water from springs. But there are times that they have no choice but to use contaminated rainwater.
- Our Philippine Constitution of 1987 provides that:
  - Section 15. The State shall protect and promote the right to health of the people and instill health consciousness among them.
  - Section 16. The State shall protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.
- Considering the effects of pesticide drift, the testimonies of the affected communities, and the results of research studies by different agencies, it is the duty of the state to safeguard the health of the affected communities as well as the environment.
- The safety and economic survival of the communities living in the vicinity of plantations are enough pressing reason to ban a practice that compromises the people's right to live. The significant reduction in the yield of coconuts close to banana plantations has been linked to the chemicals being sprayed aerially. In some areas where aerial spraying has been voluntarily stopped, such as in Sirib for 3 months now due to

<sup>4</sup> Excerpts from the Food and Agriculture Code, California Code of Regulations and Business and Professions Code accessed at [www.countyofsf.org/agcomm/regs.asp](http://www.countyofsf.org/agcomm/regs.asp) on August 28, 2006.

<sup>5</sup> According to the US Environmental Protection Agency (EPA) and the California's Office of Environmental Health Hazard Assessment under Proposition 65 because of its degradation product – ethylene thiourea (ETU).

<sup>6</sup> Cited in "Brief Toxicological Profiles of 6 Pesticides of Priority Concern" by Romeo F. Quijano, M.D. Department of Pharmacology and Toxicology, College of Medicine, University of the Philippines-Manila.

<sup>7</sup> Porter, W. et. al (1999) *Inadequate Testing of Pesticides. Warning: Pesticides are Dangerous to Your Health! Stop Endocrine Disrupting Chemicals! PAN AP Safe Food Campaign.* ISBN 983-9381-22-9. p. 17

<sup>8</sup> As cited by Extension Toxicology Network, a Pesticide Information Project of Cooperative Extension Offices of Cornell University, Michigan State University, Oregon State University, and University of California at Davis. Major support and funding was provided by the USDA/Extension Service/National Agricultural Pesticide Impact Assessment Program.

<sup>9</sup> [www.environmentaldefense.org](http://www.environmentaldefense.org)

<sup>10</sup> Taken from the Material Safety and Data Sheet of Dithane by Rohm and Haas Company

<sup>11</sup> AJMR Remarks/Comments and Discussions on the Proposed City Ordinance

<sup>12</sup> Bio-concentrate means the level of chlorothalonil in the fish is above the level found in the water where the fish are living.

<sup>13</sup> Cited in the *Journal of Pesticide Reform/ Winter 1997* • Vol.17, No. 4 from Gallagher, E.P., R.C. Cattle, R. T. Di Giulio.1992. The acute toxicity and sub lethal effects of chlorothalonil in channel catfish (*Ictalurus punctatus*). *Chemosphere* 24:3-10.

<sup>14</sup> [www.beyondpesticides.org](http://www.beyondpesticides.org)

<sup>15</sup> Cited in [www.seacc.org](http://www.seacc.org) May 18, 2005

<sup>16</sup> World Wildlife Fund Canada. *Occupational Risks from Pesticides.* [www.wwf.ca](http://www.wwf.ca)

complaints of the community, significant improvement in the leaves of coconuts is noted – young leaves were able now to come out. When aerial spraying was still on-going no new leaves were coming out, instead the old and mature leaves were severely damaged due to a) infestation<sup>17</sup> by rhinobeele, aphids and mealy bugs, and or b) damaged directly by the chemicals aerially sprayed which are not compatible with coconut and other woody plants (unlike banana that is mostly water in composition). One of the documented effects of chlorothalonil on non-target plants is reduction in yield.



**What is needed is closer monitoring and strict supervision of the proper aerial spraying procedures to ensure the safe use of pesticides**

We agree. But then, who and how can the monitoring be done? Who will see to it that only fungicides are aerially sprayed and no insecticide in the mixture? According to FPA, companies just “self police” their responsibility as they carefully maintain the quality of products for export. Moreover, FPA admits that there is no specific expressed/written law, memo circular, administrative order or whatever regarding aerial spraying. Its rules on aerial spraying are based on an internationally set standard of “Good Agricultural Practices” (GAP).<sup>18</sup> There is no national legislation to speak of therefore that would police companies in the conduct of aerial spraying.

Now it is supposed to be regulation yet there are numerous complaints by the affected residents. The required buffer zones stipulated in companies Environmental Compliance Certificates (ECCs) are blatantly disregarded thus, aggravating the problem because they are supposed to minimize pesticide drift.



**“One of the principal problems we face continuously is how to get the public to understand that trace amounts of pesticides are seldom, probably never toxic”. And that “All things are poison and none without poison. Only the dose differentiates a poison from a remedy.**

We agree that too much of everything is bad. But if a thing is already a poison by nature like pesticides – the dose won't matter anymore. No matter how small it is, it remains a poison and should be regarded as hazardous and will never become a remedy for something. People and other organisms not regarded as pests should not be exposed to them.

There are already growing scientific evidence that a constant low-dose exposure can cause adverse health effects. Some chemicals, even if at low concentration can magnify<sup>19</sup> their effects if they are mixed with other pesticides which is often a practice in plantations. According to interviews with pesticide applicators – they often combine 3 pesticides in one spray i.e. Daconil, Vondozeb and Diazole or Daconil, Vondozeb and Decis. They usually combine insecticides and fungicides.

**Every December 3 is commemorated around the world as**



**There is no alternative to aerial spraying.**

- There is.
- Aerial spraying is just one form of pesticide application. There are various ground spraying techniques that can be employed such boom spray, sprinkler system and manual spray. These techniques have been used by banana industries where aerial spraying is not allowed and they proved to be effective for they continue to do business and even expanding to more areas.
- If banana companies can exist in Baguio District without using aerial spray, why can't the others? If Bukidnon can ban aerial spraying, why can't Davao do it?



<sup>17</sup> Pest infestation of coconuts is triggered or facilitated by the constant chemical spraying in the banana plantations that not only drove away the pest within the plantations and find refuge in the nearby crops but also killed the beneficial that help regulate pest population.  
<sup>18</sup> April 24, 2006. Letter of Fertilizer and Pesticide Authority to Lia Jasmin Esquillo  
<sup>19</sup> A study by Hayes et al., 2006 of the University of California-Berkeley on frog development shows that practically the 9 pesticides they examined had no significant effects alone, but this was not the case when chemicals were combined. They concluded that if we continue to base assessment on examinations of single compounds then we are underestimating the impact of pesticide mixtures.



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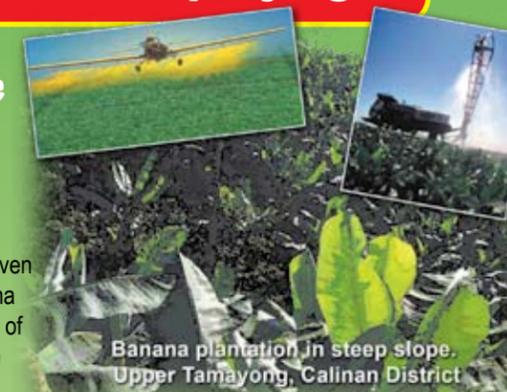


**A point-by-point response to banana companies' assertions on aerial spraying**



**Banning aerial spraying will kill the banana industry.**

- It does not have to.
- Aerial spraying has been banned in Bukidnon since 2001, yet banana plantation companies there continue to thrive, and are even expanding in the province. In Baguio District, Davao City, banana plantation companies do not utilize aerial spraying since the use of such is not allowed in the companies' environmental compliance certificates.
- There are even bananas grown organically. Organic banana farms are found in Davao City, other places in Mindanao and the world. There is a growing consumer demand for organically-grown bananas that fetches a higher price in the market.
- Leaf disease control could be done without resorting to aerial spraying of pesticides if the size of plantation is maintained at a size and a design that is ideal for ground spraying. Areas of rugged terrain, high elevation and steep slopes should not be planted with bananas in the first place. Whether for ground spraying or aerial, areas of such terrain should be kept for forest purposes.



Banana plantation in steep slope. Upper Tamayong, Calinan District



**Aerial spraying with fungicides is a cost-effective practice to control leaf diseases affecting bananas.**

- Cost effective for whom? Do we realize the real costs of the practice? So far the current computations of cost does not even include the cost to health, environment and other organisms that are affected, including the water resources that are contaminated due to pesticide drift.
- Small banana growers are complaining about the high cost of aerial spraying charged to them by the company as seen in their pay slip and worst they do not know how it was computed. This only shows that only the big banana companies benefit economically from aerial spraying and not the growers. Otherwise, there will be no complaints from them<sup>1</sup>.
- New research from the US shows that pesticide drift causes acute poisonings each year and can contribute to chronic ill health. Between 1997 and 2000, drift was responsible for half of all reported agricultural poisonings in California and a quarter of all reported poisonings<sup>2</sup>. Thus, new a law (Pesticide Drift Exposure Response Act was passed in 2004) was passed to improve response to pesticide drift incidents and pay the uncompensated and acute medical bills of victims of exposure. The real cost of aerial spraying therefore is the sum total of the cost of the following: gas + rent of the airplane + pilot's salary + medical bills of the affected residents + the cost to livestock affected + the cost of environmental damage or clean-up (air, water and soil). Factoring-in all these costs to the equation, aerial spraying therefore is very expensive because more will be hit by the drift compared with ground spraying.
- Also in California, pesticide illness reporting is more complete than in other states or in other countries like the Philippines, and over 350 illnesses and injuries were reported as a result of drift in 1991.<sup>3</sup> Pesticides have

<sup>1</sup> Position paper of growers submitted to the Committee of Environment and Natural Resources. September 26, 2006.  
<sup>2</sup> Secondhand pesticides. Airborne pesticide drift in California. Kegley, Katten and Moses, Californians for Pesticide Reform, Pesticide Action Network North America, 2003. <http://www.panna.org/resources/envHealth.html>  
<sup>3</sup> Cox, Cc. 1995 Pesticide Drift. Journal of Pesticide Incident Reform 15(1):2-7, as cited in [www.seacc.org](http://www.seacc.org) May 18, 2005

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