December 2003
Association of Flight Attendants, AFL-CIO (AFA) continues to receive reports of ill-health attributed to pesticide exposure on aircraft.

Flight attendants and passengers continue to contact AFA with reports of illness attributed to pesticide exposure on commercial aircraft.

October 23, 2003
California Department of Health Services Occupational Health Branch publishes report: "Occupational Illness Among Flight Attendants Due to Aircraft Disinsection"

Report cites the following four findings: (1) Residual disinsection poses a hazard to flight attendants; (2) The conditions of use significantly contributed to the human health hazard of residual disinsection; (3) Current assumptions about the human health impacts of residual disinsection underestimate the risks of this procedure; and (4) The relative efficacy of aircraft disinsection in preventing vector-borne disease is not well-described.

September 2003
Phase I testing of air curtain technology begins

Tests are conducted at a USDA laboratory in Florida to determine the efficacy and feasibility of using air curtains across open doors to repel insects of concern.

Early 2003
US Department of Transportation initiates inter-agency task group to investigate efficacy and feasibility of non-chemical means of disinsection

Other task group members include representatives from the Centers for Disease Control and Prevention, Department of Agriculture, Department of Defense, Environmental Protection Agency, Federal Aviation Administration, and State Department.

October 23, 2001
Air Line Pilots Association, AFL-CIO (ALPA) passes resolution at Executive Board meeting.

ALPA formally resolved to develop a pesticide-specific reporting form for its members, to support and advance the concept of prior notification of passengers and crew, and to
continue to work with AFA to resolve safety and health issues arising from aircraft disinsection.

**September 6, 2001**  
**Class action lawsuit filed against United Airlines on behalf of pesticide-affected passengers.**

"...Defendant has received and continues to receive complaints from passengers exposed to and sickened by Defendant's disinsection practices. Despite Defendant's knowledge that its disinsection practice will make certain a certain percentage of their passengers ill, Defendant has not only failed to warn its passengers that they will be exposed to hazardous chemicals, but also has assured its customers that it is being open, honest and fair in its dealings with them...Flight attendants have also protested Defendant's disinsection practices and requested that it cease..."

**July 27, 2001**  
**Class action lawsuit filed against United Airlines on behalf of pesticide-affected flight attendants.**

"In September 2000...during [pre-flight briefings], the following statements were made by [United Airlines supervisors] to the class representatives and members of the affected class: 'If there have been problems in the past, these have been corrected...Cabin service will insure interior surfaces are dry and free from pools of insecticide residue.' In truth and in fact, both before these statements were made and after, flight attendants are routinely required to board and fly on airplanes with damp, insecticide-soaked surfaces..."

**June, 2001**

Letters of support in getting the pesticides off the planes were sent to US Secretary of State Colin Powell and US Secretary of Transportation Norman Mineta, signed by 30 US Representatives and 12 US Senators. The letters were circulated by Senator Boxer (D-CA) and Representative DeFazio (D-OR).

**March 22, 2001**  
**Letter from Dr. James Cone (Chief, Occupational Health Branch) and Dr. Rupali Das (Acting Chief, Agricultural Health and Safety Section) at the California Department of Health Services, addressed to the Association of Flight Attendants, AFL-CIO**

"Based on the reports of adverse health effects among flight attendants and passengers flying from Los Angeles to Sydney, Australia, our review of the medical literature, and recommendations by other regulatory and scientific bodies, it is recommended that
aircraft disinsection as currently practiced aboard aircraft traveling between the US and Australia be discontinued immediately."

March 19, 2001
Letter to the Editor of the WHO Bulletin from Dr. James Cone (Chief, Occupational Health Branch) and Dr. Rupali Das (Acting Chief, Agricultural Health and Safety Section) at the California Department of Health Services

"The California Department of Health Services conducts ongoing surveillance of occupational pesticide illness...Health effects due to pyrethroids [1998-99] included dermatologic (22%), respiratory (19%), gastrointestinal (69%), and neurologic (73%)...[T]here is ample evidence in the published literature and through illness surveillance programs to demonstrate that exposure to pyrethroid pesticides may result in adverse health effects, especially among sensitive subpopulations...[T]here is inadequate information to determine that aircraft disinsection as currently practiced is safe for passengers and crew..."

January 2001
ALPA passes aircraft disinsection resolution.

In recognition of health problems related to aircraft disinsection practices reported by its members, ALPA passed an Executive Board resolution to investigate spraying methods and to procure a safe procedure for world-wide aircraft operations.

August 2000
AFA finalizes standardized reporting form.

In response to members' requests, AFA steps us efforts to ensure that pesticide-related incidents are reported, documented, and maintained in a database.

December 2000
Excerpts from a pilot's report concerning the residual application of pesticides.

"I became very ill as a result of an over exposure to pesticides that were sprayed in the airplane hours prior to departure. I believe the safe operation of the flight was compromised because I was unable to properly perform my First Officer duties during the arrival and landing...and I believe the other pilots were also affected. There was a noticeable pesticide odor as you entered the airplane and a strong odor was present in the upper deck and cockpit...During taxi out my eyes started burning and I said something to the other pilots and they had the same problem. When I awoke from first break, my head was congested, my eyes wee burning, I had a sore throat and I had a rash on both sides of my neck. As the flight progressed, my sinuses swelled worse, I had problems swallowing,
and I was having problems breathing. I was making mistakes and suffering short-term memory loss and confusion. My stomach was upset and I didn’t feel like eating…I believe several flight attendants also got sick and possibly sought medical help.

August 1999

"According to Antonio Bravo, the special assistant for pesticides at the EPA, there are currently no pesticides that are registered in the United States for use in disinsection of occupied aircraft cabins. Furthermore, says Bravo, 'The EPA does not endorse the practice of disinsection and will not register any new products for use in occupied aircraft cabins unless the agency can determine that their use will not pose unreasonable adverse effects to passengers and crews. The potential risks to human health from routine disinsection seem to outweigh any perceived benefits.'"

February 2, 1998
DOT issues a Termination of Rulemaking on passenger notification (FR 63: 5329, Feb 2, 1998)

"In general, the airlines and travel agents opposed the rule, while the general public, health organizations, flight attendants, and pilots favored the promulgation of a rule…"

February 2, 1998
DOT issues a press release: "Campaign against on-board pesticide spraying a success, Secretary Slater says"

"…In early 1994, 24 countries required the [in-flight] spraying of all arriving flights. Now, only four still have that requirement [Grenada, Kiribati, Madagascar, and Trinidad and Tobago]. Of these, only Grenada and Trinidad and Tobago are served by direct flights to [sic?] the United States. The six countries allowing the spraying of empty planes are Australia, Barbados, Fiji, New Zealand, and Panama…"

1996
The Nairn Review – a scientific report commissioned by the Australian government and intended to review aircraft disinsection procedures - is published. (See also Lindsay Review, 1988)

"Recommendation 67: The Review Committee recommends that aircraft disinsection be discontinued...A recent review by the [Australian] Bureau of Resource Sciences on incursions of exotic insects presents no evidence that exotic insects pests have entered Australia through aircraft...Indeed the report, while suggesting that compulsory disinsection of aircraft may reduce the risk of introducing hitchhiking insects, comments
that 'it is likely that most hitchhiking species gain entry via shipping containers and vessels'".

May 14, 1996
EPA issues Pesticide Registration (PR) Notice 96-3

"The Agency has received information which raises questions concerning the potential human health risks associated with the use of insecticide spray products in occupied aircraft cabins. In addition, the Agency doubts that the benefits associated with this use exceed the risks of such use. The Agency believes that the use of insecticide spray products in occupied cabins may result in unreasonable adverse effects on the environment. Products that pose unreasonable adverse effects to the environment do not meet FIFRA's standard for registration, and are subject to cancellation under section 6(b) of the statute…Registrants of disinsection products with labels that explicitly permit use in occupied cabins and who seek to continue that use must generate data and/or provide relevant information to demonstrate that the use in occupied cabins does not pose unreasonable adverse effects to human health….All insecticides within the scope of the Notice distributed or sold by registrants and supplemental registrants should bear labeling which is consistent with this Notice by October 1, 1997…"

May 1, 1995
DOT issues a press release: "Secretary Pena praises major step toward halting insecticide spraying aboard passenger aircraft"

Secretary of Transportation Federico Pena today praised a recommendation by a division of the International Civil Aviation Organization (ICAO) for nations to stop requiring the routine spraying of insecticide on aircraft while passengers are on board. "This action, sponsored by the United States, is the result of our year-long effort to halt routine on-board pesticide spraying and a major step toward our goal of the total elimination of the practice," Secretary Pena said…Last year, Senator Leahy also introduced a Concurrent Resolution urging ICAO to end all spraying of pesticides on international flights. That resolution was passed unanimously in both the House and Senate. "The overwhelming support, both in Congress and the administration, for ending this unnecessary chemical exposure should be a clear signal to the international community that American travelers will not travel to countries that welcome them with an insecticidal spray," Leahy said.

March 1, 1995
EPA publishes Notice in the federal register with request for comments regarding pesticide products used to disinsect aircraft

"The Agency has received information which raises questions concerning the potential human health risks associated with use of insecticide spray products in occupied aircraft cabins…EPA is soliciting comments on the Agency's draft Pesticide Regulation (PR) Notice which proposes strict measures to prevent human exposure to any pesticide product (insecticide) used for disinsecting aircraft."
Excerpts from Docket OPP 00403

"Has anyone considered that there will be a burden upon the carriers themselves, with regard to the requirement that the cabin be closed and then ventilated for 15 minutes before anyone can work in the cabin or reboard passengers? This delay [sic] be costly for the airline in terms of wasted fuel or lost time...Notification and self-certification should save a great deal of time for the registrants and the Agency..." William Chase II, McLaughlin Gormley King Company

"Due to aircraft being pre-treated with permethrin, myself and numerous other paxs [passengers] and flight attendants experienced severe [allergic] reactions such as nausea, runny nose and eyes, sore throat, sneezing, loss of energy. A few pax passed out, extreme fatigue, rash. This situation needs to be alleviated soon or many flight attendants will become ill and productivity and sick leave will be affected adversely..." United Airlines flight attendant, R. Le Beau

"[T]his proposed 15 minute reentry interval is inconsistent with reentry intervals established in EPA's new [agricultural] worker protection standards. At the very least, aircraft reentry intervals should be set as long as those for agricultural workers exposed to similar pesticides (e.g., 12 or 24 hours for most of the pesticide on the aircraft list)...The [EPA] worker protection standards also require that treated fields and greenhouses be posted at their entryways with signs stating that the area has been treated with pesticides. A similar posting and/or notification requirement should be in place on treated aircraft to warn chemically-sensitive or other passengers wishing to avoid exposure to...pesticides." Becky Riley, Program Associate, Northwest Coalition Against the Misuse of Pesticides

January 18, 1995
US Department of Transportation issues a Notice of Proposed Rulemaking regarding passenger notification of in-flight pesticide spraying

"The Department of Transportation proposes to issue a rule that would require US airlines, foreign airlines, and their agents at time of booking transportation, to notify individuals purchasing tickets on flight segments originating in the United States if the aircraft will be sprayed with insecticide while passengers are board and to provide immediately upon request the name of the insecticide used. This action is taken at the initiative of the Department...Recently, concerns have arisen about the harmful effects of certain disinsection treatments...[I]n 1979, the Centers for Disease Control and Prevention (CDC) amended the Foreign Quarantine Regulations (42 CVR Part 71) to discontinue requiring routine spraying because of concern for the health of passengers and crew, and the lack of evidence that aircraft spraying played a significant role in disease control and the belief that discontinuation of spraying would not present a significant public health threat. Conversely, the spraying caused undue discomfort to many passengers, and had the potential for creating acute allergic reactions, asthmatic
attacks, and other allergic or respiratory problems in certain passengers… Since…1979, there have been not outbreaks of vector-borne disease in the United States that can be attributed to imported vectors." FR 60: 3596-3598, January 18, 1995 (Docket No. 50031, Notice 95-2).

**Excerpts from Docket 50031.**

"The Australian Government is aware of the concerns recently expressed by some air passengers and crew about the safety of the disinsection products. As a result, the relevant Australian agency…recently initiated a review of Australian disinsection requirements and the safety of the products used…The pyrethroids are toxic to insects and to mammals because they interact with the sodium channels of the axons in the peripheral and central nervous system…Permethrin can [however] induce skin sensations and paraesthesia in exposed workers. Numbness, itching, tingling and burning are frequently reported in those handling or applying it. However, there are not indications that permethrin has adverse effects on human beings when used as directed…There is a largely margin for safety of passengers and crew, given the likely low exposures…D-phenothrin (2% w/w) has also been found to be biologically effective and safe for passengers and aircrew when applied as an aerosol for aircraft disinsection…Neither permethrin nor d-phenothrin are considered sensitizing agents…"  

David Spencer, Embassy of Australia, Washington, DC, OST-95-223-25

"The airlines are extremely sensitive to the fact that insecticide spraying may cause adverse reactions for some passengers and employees…[W]ith a handful of exceptions, passengers apparently experience little more than minor, if any, inconvenience or discomfort from cabin spraying…Merely advising prospective passengers who have questions to consult a physician, without at least engaging in some limited discussion, would only heighten emotional reactions and quite possibly result in needlessly lost sales. (emphasis added) At the same time, lengthening the time a sales agent spends on the telephone increases the opportunity cost of lost calls, which in turn means lost revenue."  

John Meenan, Air Transport Association, OST-95-223-27

"Requiring airlines and travel agencies to warn customers of potential health hazards is an unfair burden and could harm the public…(emphasis added) Notice should not be required for flights that are disinfected while passengers and crew are not on board; however, DOT should immediately cease encouraging countries to adopt such residual spraying methods, which can be disastrous for US airlines. First, there is no EPA-approved residual spray. Second, residual spraying requires an airline to either dedicate particular aircraft to particular routes or spray all aircraft in its fleet – both of which are cost prohibitive."  

Bruce Charendoff, American Airlines, OST-95-223-28

"All of the countries that Qantas operates into accepts residual treatment and consequently all Qantas aircraft are residually treated. Thus, it would be
misleading for the US government to indicate to travelers from the US that on Qantas services to certain countries, they will be sprayed with insecticide while on board."  

Trevor Long, Qantas, OST-95-223-24

"…IATA [the International Air Transport Association] is an association that includes two hundred and fifteen of the world's scheduled international airlines…IATA has prepared a provision on this subject that will be considered at the…[upcoming meeting of ICAO]: 'Contracting States which still require disinsection of aircraft shall develop methods and/or products to be used by air carriers which cannot be harmful to passengers or crew members. In the event such methods/practices are not available, they shall discontinue requiring airlines to disinsect their aircraft…'"  

International Air Transport Association, OST-95-223-38

"Until all countries end this unhealthy and ineffective practice, American travelers must be informed of the risk they take in traveling to countries that require aircraft disinsection…I am concerned that the regulations only cover the on-board spraying of insecticides and not the residual method…In addition, the product used for the residual treatment is categorized as a possible carcinogen by the EPA and is not registered for this use in the United States… For flight attendants and frequent fliers, the residual treatment presents a very real health concern. The fact that passengers do not see it being sprayed on them does not mean it is any safer for them than the aerosol spray."  

US Senator Patrick Leahy (VT)

"We feel that notification of spraying when both passengers and crewmembers are on board an aircraft is absolutely essential. However, we are also very concerned about the effects of residual spraying on a person's health and well-being…AFA has received reports from flight attendants who have suffered moderate to severe allergic symptoms and discomfort on aircraft that have been residually sprayed…Passengers booking flights on aircraft that have been residually sprayed with insecticide should be so informed. The rule should be broadened to include notice of residual spraying to crew and allow for crewmembers to disembark while the aircraft is being sprayed…”  

Christopher Witkowski, Director of Air Safety & Health Department, Association of Flight Attendants, AFL-CIO, OST-95-223-29

"Finally, airline workers are likely to be exposed to more of the pesticide more regularly than are most passengers. Furthermore, adverse reactions in flight crewmembers could potentially lead to even more serious consequences than illness occurring in passengers, given their integral role in flying the plane. Notice and protective equipment must be issued to flight crews, and risk information needs to be given so that they can make informed choices about the health risks they face from occupational exposure to pesticides… Until then, we think that airlines and others will face increased liability if they do not act to protect passengers and workers from pesticide exposure without adequate protections and advance notice and consent."  

(Becky Riley, Program Associate, Northwest Coalition Against the Misuse of Pesticides, OST-95-223-33)
January 10, 1995
DOT Preliminary Regulatory Evaluation for the NPRM on aircraft disinsection, Docket No. 50031 RIN 2105-AC14 (Nancy DiModica and Robert D. Nutter)

"Although numerous letters with complaints have been received by the EPA and DOT (DOT received in excess of 100), there is no solid information on the numbers of people who have been adversely affected by disinsection spraying or the frequency of adverse reaction in the general population… The product used by US carriers for the aerosolized method… had been labeled to show that the product can be sprayed in airliner cabins to disinsect the aircraft and but [sic] also warned that the product is hazardous to humans… [W]e conclude that there is sufficient likelihood that there may be a significant number of susceptible individuals in the population to warrant proposing the [passenger notification] rule and request information on which to refine our decision-making process… [R]egulatory action is the only way that the Department can ensure that consumers are warned in advance of the threat of being sprayed…

"Having received no applications for the use of permethrin to disinsect aircraft, the EPA has not approved the use of permethrin for this purpose. Accordingly, it is not legal to apply any non-EPA approved insecticide in the U.S. and U.S. carriers electing this option must apply the permethrin abroad…

May 18, 1994
Airliner Cabin Air Quality: Hearing before the Subcommittee on Aviation of the Committee on Public Works and Transportation, House of Representatives, 103rd Congress, Second Session, May 18, 1994

"…The pesticide that is being used has a label. And the label says: hazardous to humans and domestic animals; harmful if swallowed or absorbed through the skin; avoid breathing vapors. Tough to do on an airplane, particularly when they shut off the circulation system. Avoid contact with skin and eyes. Tough to do when they spray at you and over your head. Remove pet birds and covered fish aquariums. Luckily, we don’t have fish aquariums on airplanes. Ventilate area before entering. Well, I suppose we could decompress the plane, however, directions for usage say, use while aircraft is in flight or on the ground prior to takeoff. Somewhat contradictory to all of the precautions, use at least 30 minutes prior to airplane, crew and passengers are on board and all hatches, ventilation openings are closed. Stop ventilation system for a period of not less than three minutes after spraying. The substance is declared hazardous to humans. We are not supposed to breath it, touch it; you are not supposed to be in proximity to it; you are supposed to ventilate the area and at the same time we close down the ventilation and spray people with it and make them breathe it. There have been some very serious reactions… [W]e need to look at the issue of pesticides on an extremely urgent basis…I would defy anybody on this panel to support spraying people with a substance that is clearly labeled it is not supposed to touch your skin, it is not supposed to touch your eyes,
"... it is not supposed to touch your nasal membranes, you are not supposed to inhale it, you should evacuate the area, the areas should be ventilated..." US Representative Peter DeFazio (OR)

"...Passengers have the right to know before purchasing their tickets whether they will be sprayed with insecticides...Equally important, is the need to change international standards for aircraft disinsection to reflect the development of safer, more effective disinsection practices..." US Senator Patrick Leahy (VT)

"The United States Centers for Disease Control and Prevention (CDC) ended this practice in the United States 15 years ago citing [concerns] and stating that 'disinsection of aircraft has never been shown to be highly effective in disease control or species containment.'

US Representative Peter DeFazio (OR) and US Senator Patrick Leahy (VT)

"[Upon boarding, the airline] advised me that it was impossible for me to be exempted from exposure to the pesticide...The following morning, I phoned...United Airlines...[The representative] told me that I COULD HAVE BEEN DEPLANED after landing and prior to the spraying if the United Airlines representative had put this information into the record as he should have...Please understand how dangerous the exposure to chemicals is to people with breathing problems and how important it is for all of us to have the system work on our behalf. I believe I did all that was asked of me by United Airlines and the system failed me." Passenger Karyn Planett

"In 1993, EPA became aware of several incidents in which airline personnel and passengers experienced adverse reactions after being exposed to an in-flight pesticide treatment. The reported health symptoms associated with the spray ranged from headaches and nausea to more severe cases in which seizures and memory loss were said to occur. The pesticide that may have been associated with these reported adverse reactions is the sumithrin product registered for in-flight use [since 1979]... It is impossible to prevent dermal or inhalation exposures during an in-flight cabin infliction..."

Stephen L. Johnson, Acting Director, Registration Division, Office of Pesticide Programs, EPA

"...Unsuspecting passengers, including pregnant women, infants, chemically-sensitive, elderly, or immune-compromised individuals (e.g., those undergoing cancer treatment) are doused with pesticide, yet no consideration is given to individual health status as passenger are blithely told that the spray is "safe" or won't harm humans. Passengers have reported symptoms including throbbing head, aching joints, swollen lymph glands, chills, swollen and itchy eyes and face, choking, and coughing...Of course, as is often the case, it is the workers, including those on US airlines, that experience the worst exposures..."

Becky Riley, Program Associate, Northwest Coalition Against the Misuse of Pesticides
April 14, 1994
US Departments of State and Transportation commit to take action against in-flight spraying

The Department of Transportation asked the Department of State to forward a letter, through its diplomatic and consular posts, from Secretary Frederico Pena to the transportation ministers of every nation recognized by the US. The letter requested a description of any disinsection requirements and urged countries to drop in-flight spraying requirements.

March 1994
Article on aircraft disinsection published in travel magazine (March issue of Conde Nast Traveler, written by Karin Winegar, pages 25-29)

"...Some overseas reactions: AUSTRALIA Dennis Ayliffe, National Program Manager, Australian Quarantine and Inspection Service..."We haven't been approached officially by the US government but for the moment we will certainly continue using the sprays because they are approved by the World Health Organization and have extremely low toxicity for human beings..." NEW ZEALAND John Bongiovanni, National Advisor, Ministry of Agriculture and Fisheries: "...Unpleasantness may affect passengers due to [an] aerosol effect rather than the chemical: Passengers can probably experience the same discomfort if they're near hair spray, deodorant, or other aerosols (emphasis added)..."

November 1993

This article was later summarized in a Dec. 21, 1993, USA Today business travel column for which Bill and Linda Bonvie were interviewed. That column subsequently came to the attention of Martin Tolchin, then aviation writer for the New York Times, whose 16 January 1994 brought it to the attention of then Secretary of Transportation Federico Peña. Secretary Peña initiated the letter-writing campaign that ultimately resulted in the requirement for disinsection being dropped by most of the countries that had maintained it.

October 1992
Passenger files lawsuit against American Airlines

American Airlines passenger Julia Kendall was sprayed upon descent into St. Martin (Caribbean) in October 1992. In 1995, she filed an $8.5M suit against the airline. [Note: Not sure of outcome.]
1988
The Lindsay Review – a scientific report commissioned by the Australian government and intended to review aircraft disinsection procedures - is published.

The 1988 Lindsay Review "expressed concern that the scientific basis for the need for disinsection had not been established" and commented that "disinsection is an excellent example of quarantine being applied in response to a general biological principle, with little or not attempt to asses the risk, consider wider effects, or evaluate its cost-effectiveness."

1988
Passenger file lawsuit against Qantas Airlines

Qantas passengers Irene & Julian Kleiner were sprayed upon descent into Cairns, Australia. Irene Kleiner sued Qantas but a federal judge threw the case out, ruling that her reaction to the insecticide spray had been "idiosyncratic."

1983
US Assistant Surgeon General, Donald R. Hopkins issued memo re. aircraft disinsection

"The US can not support the use of insecticides in aircraft areas with passengers present. Pesticides registered for such use should not be inhaled. In effect, the safety issue precluded a US requirement for disinsection…disinsection of aircraft has never been shown to be highly effective in disease control or in species containment (emphasis added)…"

October 12, 1979
CDC publishes the final rule to drop the routine spraying requirements for aircraft arriving in the US (largely conducted on flights arriving in the state of Hawaii at that time)

"The revised regulation provides that the Director, Center for Disease Control, may require disinsection of an aircraft only if (1) it arrives from an area that is infected with insect-borne communicable diseases, and (2) it is suspected of harboring insects of public health importance…One comment endorsed the proposed revision and urged that it be adopted as soon as possible. It stated that implementation of the rule should eliminate passenger complaints which arise from spraying the aircraft when passengers are still aboard...

"…Exceptions were received from two parties to the following statement which was published in the NPRM: "The insecticidal formulations containing pyrethrin (which is extracted from a plant) currently used to disinsect aircraft cause undue discomfort to
many passengers and, in some cases, place those exposed at risk of developing acute allergic (anaphylactic) reaction." The exceptions were based upon an article published in 1965 which the parties believe refutes statements on the risk of allergic reactions from the pyrethrin aerosols. However, the later literature documents the occurrence of anaphylaxis and other severe allergies in persons exposed to pyrethrins, and we believe that the body of evidence in the published literature indicates that commercial pyrethrins are potent allergens (emphasis added)…" (FR 44: 58911-58912, October 12, 1979)

March 28, 1979
CDC issues a Notice of Proposed Rulemaking to drop the routine spraying requirement for flights arriving in the US (largely conducted on flights arriving in the state of Hawaii at that time)

(Then-current procedures allowed for in-flight disinsection of aircraft arriving in the US from +/- 35 degrees latitude (with the exception of Japan), as well as from all of Africa. At the time, flights arriving in the state of Hawaii were routinely treated with passengers and crewmembers on board. The proposed rule stated that spraying would only be done if particular criteria were met, and that the aircraft could not be treated until the occupants had left the aircraft.)

"The insecticidal formulations containing pyrethrin [sic?]…currently used to disinsect aircraft cause undue discomfort to many passengers, and, in some cases, place those exposed at risk of developing acute allergic (anaphylactic) reaction (emphasis added)…The proposed revision will provide for disinsection of an aircraft if it arrives from an area that is infected with insect-borne communicable diseases and is suspected of harboring insects of public health importance. . The procedures for disinsecting aircraft will be revised to require that aircraft be disinsected by airline personnel immediately after the plane lands and all passengers and crew deplane…” (FR 44: 18536-18537, March 28, 1979)

January 31, 1979
US Centers for Disease Control and Prevention (CDC) issues "Decision to Develop Regulations" to drop the routine spraying requirement for flights arriving in the US (largely conducted on flights arriving in the state of Hawaii at that time)

"The existing regulation will be revised to eliminate the requirement for routine disinsecting of aircraft on certain international flights landing at airports under the control of the United States." FR 44: 6155, January 31, 1979

November 13, 1977
Flight attendants file lawsuit against US Department of Agriculture (civil action 77-1941, filed in Washington, DC federal district court)
The Aviation Consumer Action Project and the Association of Flight Attendants, AFL-CIO filed suit against the United States Department of Agriculture (USDA) regarding the USDA requirement that the aircraft cabin be dusted with a mixture of carbaryl (trade name, Sevin) and DDT pre-boarding on flights departing from the mid-west and east coast to California. The program was apparently intended to halt the possible importation of Japanese beetles to CA. The suit was dropped when the USDA agreed to stop using DDT in favor of d-phenothrin which was registered with the EPA for in-flight spraying in the passenger cabin in 1979. (Note: still following on other details and current practices. Suggestion that the use of DDT/carbaryl did not actually stop until 1986.)

July 1969
World Health Organization (WHO) International Health Regulations, Health Measures and Procedures Part IV, Chapter I, Article 25 (1)(a)

"Disinfection, disinsecting, deratting and other sanitary operations shall be carried out so as to not cause undue discomfort to any person or injury to his health...Where there are procedures or methods recommended by the Organization, they should be employed."

October 12, 1929
The Warsaw Convention (49 U.S.C. § 40105 Article 1)

Article 17 states that the carrier is liable for damage sustained in the event of the death or wounding of a passenger or any other bodily injury suffered by a passenger, if the accident which caused the damage so sustained took place on board the aircraft or in the course of any of the operations of embarking or disembarking. Article 20 states that a carrier is not liable if the carrier proves that the carrier has taken all necessary methods (emphasis added) to avoid the damages; conversely, if the carrier has not taken such methods, the carrier is liable.

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EXCERPTS FROM AIRCRAFT DISINSECTION STANDARDS AND PAPERS PUBLISHED BY THE WORLD HEALTH ORGANIZATION & THE INTERNATIONAL CIVIL AVIATION ORGANIZATION

"Contracting states shall (emphasis added) ensure that their procedures for disinsecting or any other remedial measure are not injurious to the health of passengers and crew and cause the minimum of discomfort to them." (ICAO Annex 9 (Facilitation) Section 2.32 originally issued in 1950 and crew provision was added in 1957.)

"Contracting states shall (emphasis added) comply with the pertinent provisions of the current edition of the International Health Regulations of the World Health Organization. In accordance with Article 23 of the said Regulations, Contracting States shall apply as a
maximum the health measures permitted therein for the entry, departure and transit of passengers and their baggage, cargo, and other articles." (ICAO Annex 9 (Facilitation) Section 8.12. Originally issued in April 1953 and reference to WHO was added later.)

Note that "Three states have notified ICAO of differences to Standard 8.12: Australia, India, and Saudi Arabia. Australia is not bound by the International Health Regulations. India complies with the provisions of International Health Regulations (1969) of the World Health Organization except to the extent of the reservations filed (emphasis added, reservations not specified)." Review of Aircraft Disinsection Requirements and Methods. Presented by Dr. C. Curdt-Christiansen, Chief of Aviation Medicine Section of ICAO in Geneva November 1995 and revised in March 1996)

"Recommended Practice: Contracting States shall limit any routine requirement for the disinsecting of aircraft cabins and flight decks with an aerosol while passengers and crews are on board to same - aircraft operations originating in, or operating via, territories that they consider to pose a threat to their public health, agricultural industry, or environment. (ICAO Annex 9 (Facilitation), Section 2.24. Originally issued in 1995 and crew provision as added in April 1997. Changed from "should" to "shall" in 2001)

[Note: "As to the interpretation of 'via': in my opinion, the regulations make sense if 'via' means having stopped over in any endemic area within the period of time mosquitoes and other insects are likely to remain alive and well, and dangerous if not sprayed. This period is for anopholes perhaps several days, perhaps one week, according to Dr. Pierre Guillet of WHO..." Dr. Claus Curdt-Christiansen, Chief Aviation Medicine, ICAO, Email correspondence June 5, 2001.]

["Australia receives direct flights from only about a dozen of these countries [from which the WHO recommends departing aircraft should carry out disinsection procedures]. Nevertheless, if Australia were to adopt the UK-France-Netherlands approach and disinsect only aircraft from these countries, the obligations for airline operators and AQIS personnel would become significantly more complex." "Aircraft Disinsection – A report commissioned by the Australian Quarantine & Inspection Service" Naumann & McLachlan, June 1999]

"Contracting states which require disinsection of aircraft shall (emphasis added) periodically review their requirements and modify them as appropriate, in light of all available evidence relating to the transmission of insect vectors to their respective territories via aircraft." Proposed text only, Annex 9 (Facilitation), Section 2.24. Drafted by Facilitation Panel 12-16 February 2001 and comments will be reviewed by Air Transport Committee, January 2002.
"Recommended Practice: To ease concern and reduce public opposition to the procedure, Contracting States should provide appropriate information, upon request, in plain language, to air crew and passengers on the reasons for and safety of properly performed aircraft disinsection." ICAO Annex 9 (Facilitation), Section 2.28.1, Issued in 10th Amdt., November 1999.

"In 1984, the World Health Organization (WHO) recognized that the conventional methods of disinsection had in some cases apparently caused allergic and other unfavorable reactions in passengers or at least might have acted as triggers for allergic reactions by some well-known allergens and/or haptens..." Proposal for Policy Guidance Related to the Disinsection of Aircraft, presented by the Secretary of the Facilitation Panel, International Civil Aviation Organization, 17-21 November 1997

Note: In a 2000-2002 publication, the WHO classifies permethrin as "moderately hazardous".


- "The purified active ingredients of both pyrethrin and pyrethroid sprays have not proved positive in patch tests and are not considered allergenic...Systemic [pyrethroid] poisoning is characterized by an acute excitatory action upon the central nervous system, with either tremor, hyperexcitability, chorea or seizures, depending on the agent and use. Recovery from systemic poisoning is generally within hours. No lasting effects are seen in man or animals (Ray, 1991; WHO, 1991b), after either single or repeated doses with a variety of pyrethroids." Page 23, Toxicology & Safety Aspects

- "Where seen, direct dermal toxicity...is characterized by paraesthesia – a spontaneous tingling sensation of the skin with interference with normal sensation...This exposure level would not be reached by disinsection procedures...The information available concerning the adverse pulmonary effects of exposure to an insecticide aerosol is very limited (emphasis added). [Symptoms were assessed] in a study on seven patients with asthma...All patients described chest tightness after exposure but only one demonstrated a fall in FEV1, a measure of pulmonary function, higher than 20%...A small number of clinical conditions allegedly associated with pyrethroid or pyrethrin exposure have been reported (emphasis added) (Was & Hoffman, 1994; Paton & Walker, 1988; Zellers et al, 1990; Pall et al., 1987)...Given the understanding and the mode of action on pyrethroids and low exposure for aircraft

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1 International Programme on Chemical Safety, "The WHO Recommended Classification of Pesticides By Hazard and Guidelines to Classification 2000-2002" WHO/PCS/01.5
disinsection it is unlikely that this procedure will precipitate or influence any pre-existing disease of passengers and crew…Although there are no reports of adverse human responses to aircraft disinsection available in the literature, the Consultation was informed of anecdotal reports of pulmonary symptoms following aerosol spraying on aircraft. (emphasis added) Although details were not available, the following considerations may place these concerns arising from anecdotes into perspective…”

Page 24, Toxicity & Safety Aspects

- "Although not of toxicological concern the Consultation also recognized that some individuals may be concerned by publicity regarding multiple chemical sensitivity (MCS) (emphasis added) Characteristics of MCS are non-specific symptoms (e.g., headache, dizziness, fatigue, irritability, loss of memory or concentration) in relation to exposure to a variety of chemicals at extremely low levels…No laboratory abnormalities were ever found. Since the nature of these subjective complaints is not understood and agent and dose-dependency have not been demonstrated, it would be difficult to forecast whether chemicals used in aircraft disinsection are going to be added to the increasingly long list of chemicals responsible for this bizarre complaint (emphasis added)." Page 25, Toxicity & Safety Aspects

- Note: Only four sentences were dedicated to the discussion on the "Toxicology and Safety Aspect" of the solvents in the WHO 1995 IPCS report (Section 9.3, page 27), without any references or caution. Chemical analysis has identified methylene chloride, benzene-based compounds (such as toluene, xylene, naphthalene) and siloxane derivatives.

- "Although some individuals may experience transient discomfort following aircraft disinsection by aerosol application, (emphasis added) there is no objection to any of the recommended methods of aircraft disinsection from a toxicological perspective." Page 30, Conclusions & Recommendations