

ACID INJURIES AND UNTRUE RUMOURS

A Clean Slate for Canada

There are many horror stories circulating throughout the beekeeping community about the dangers of formic acid use. There are reports of people becoming dependant on oxygen bottles, getting cancer, being burned, loosing their eyes and the list goes on.

IF THEY ARE TRUE, THEN THEY MOST LIKELY HAPPENED OUT OF STUPIDITY:

Formic acid has been used for a long time in Europe against the Tracheal mite. The acid was used in traditional European bee houses where 20 or so hives were mounted into the southern wall of the bee house looking like rows of lockers in schools and were accessed from behind. The formic acid treatment was done by filling a little bottle full of acid, inserting an evaporating wick and putting it behind the wooden door to each hive (which of course does not seal). When the Varroa came, the bottles just got bigger. Kramer Plates, which are today's Mite Away, and many other systems have been used.

So where is the problem? In the traditional bee house, behind the hive's leaky door is the beekeeper's workspace. There is a bench for repairs, an extractor, honey storage, and packing facility. This space often also doubled as living quarters and kitchen for the beekeeper in the summer. These beekeepers lived, worked and slept in a room where 20 acid dispensers were behind leaky doors, and the leaks contaminated the entire house with formic acid fumes.

The claim is that they all got cancer. The truth is that formic acid is not carcinogenic, but can cause lung damage. No one in North America sleeps in a room full of acid fumes.

All of the formic acid dispensing gadgets require measuring and filling of little containers. Often these dispensers need to be filled very carefully and as a result are filled right in front of the beekeepers face and often in a closed room. In many countries where people use formic acid these people do not have any respirators, goggles, aprons or gloves.

MiteGone eliminated any measuring or handling of acid above the waistline, including carrying buckets of leaking wet pads or liquid acid to soak them in.

In some of these countries, beekeepers do not have enough money to buy respirators so they are not sold. Occasionally, someone may be able to get one from a large chemical or oil factory. This does not help protect the beekeeper as they can't even get a proper filter. No wonder these people lost their sight, have suffered from acid burns, and get lung damage from prolonged exposure to the acid. We do not live in a third world country; there is no excuse not to use respirators and protective gear.

“If All Else Fails, Read the Instructions” should be the title for one case in which beekeepers were thinning acid with the barrel of acid up on the fork of a front loader raised to eye level. This was done so they could easily see the lines on the measuring bucket. The beekeepers were using a tap installed in the barrel to fill measuring pints, they were dumping (and splashing) the pints into pails and then adding a pint of water for each 2 pints of acid. This process breaks a major chemist’s rule which is to **NEVER pour water into acid as it will explode**. Thankfully, formic acid is forgiving; any other type of acid and they would have had an explosion.

To add to their errors of splashing and mixing, one of the helpers accidentally touched the hydraulic controls tilting the forks of the front loader down. As a result, the barrel fell and the tap broke, and acid spilled everywhere. As they tried to stop the spill and upright the barrel, the workers leather shoes melted in the spilled acid and acid splashed everywhere contaminating the entire honey house. They broke the second major rule of working with acid and that is to **NEVER work or thin acid inside and keep it on solid ground**.

I could go on and on, but I think it would be much better if you read on, perhaps two or as many as 5 times, about the correct way to handle and treat with acid. You do not want to become another “stupidity” statistic.

Canadian & US Correspondence on: ACID SAFETY AND UNTRUE RUMORS

In the October 2005 issue of W.A.S James Bach wrote and I replied,

I quote:

“Several persons in Canada have severely damaged their lungs from breathing the acid during applications made to bee colonies. And some have burned themselves because of not using the correct gloves or spilling the acid on their clothes.”

I replied:

I just finished 4 seminars in Manitoba and neither myself, Rheal Lafreniere (Provincial Apiarist of Manitoba), Janet Tam of Ontario beekeepers transfer team or any of the 150 beekeepers attending the seminars have no knowledge of any of the above cases, except some blisters on pinched gloves. Can you please provide me with your source and actual proof of those things really happening in Canada? I am contacting all provincial apiculturists and provincial organizations to verify my information that Canada has an outstanding clean record of no lung damage because C-94 released very good safety recommendations in 1994.

Note: At this 2007 revision I am still waiting for James Bach’s answer and documentation of injuries in Canada.

Results of the search

By now, January 2006, I have searched and followed the rumors to the real source including the only one quoting a reputable source: former Florida State Apiarist and my friend Laurence Cutts. According to Laurence he was misquoted.

The person (name withheld) who lost their lungs and was on oxygen recently died. According to the deceased's son, it was a rare lung disease not connected to the use of formic acid. According to Laurence the local beekeepers who knew that this person was known to use formic acid attributed his illness to its use. Hence, this is an example of how these horror stories are created.

Following are replies that I have received up to today and I am looking for more input from anyone. According to what I have received:

UNTIL NOW THERE IS NO EVIDENCE THAT FORMIC ACID IS CARCINOGENIC AND NO ONE IN THE US OR CANADA LOST LUNGS OR LIFE TO FORMIC ACID.

Please read the following emails from Canadian sources:.

-----Original Message-----

From: Clark, Kerry AL:EX [mailto:Kerry.Clark@gov.bc.ca]

Sent: Friday, December 16, 2005 1:00 PM

To: 'bruzicka'

Subject: Formic safety

Hi Bill

You can Google for Formic acid and MSDS (Material Safety Data Sheet) and get lots of similar documents.

I see NO hazard of cancer mentioned, among the many that ARE mentioned regarding corrosiveness.

I see the one case of a worker killed when splashed directly in the face with hot formic acid from a vat, mentioned several times (years before beehive use) so if there WAS a serious case involving bee use I would expect it would be mentioned.

Like household bleach, gasoline, vodka, aspirin, salt etc, a person COULD kill themselves with formic acid, and like Viagra, some people using the product are going to die eventually (and when ENOUGH people use it, somewhere, someone is going to die WHILE using it). The innuendos and correlations are worth next to nothing unless they have been properly investigated and an actual causal relation found: and even then it means little if the use pattern is not in compliance with that recommended.

<http://www.osha.gov/SLTC/healthguidelines/formicacid/>

Kerry Clark, P.Ag., Crop Protection Specialist

B.C. Ministry of Agriculture and Lands

4th Floor, 1201 - 103rd Ave

Dawson Creek BC V1G 4J2

Tel. (250) 784 2559 Fax 250 784 2299

Toll Free: 1 877 772 2200

-----Original Message-----

From: Clark, Kerry AL:EX [mailto:Kerry.Clark@gov.bc.ca]

Sent: Monday, October 03, 2005 1:06 PM

To: 'Bill Ruzicka'

Cc: 'Medivet - Willy Baumgartner'; 'jbach'

Subject: RE: Formic Acid Injuries?

Hi Bill

I have no knowledge of cases that would support Jim's statement about lung damage. I hadn't objected to other such statements, feeling that they were conceivable overstatements meant to heighten precaution. I saw Jim's article and wondered whether there was justification for that statement. (Jim's email above may be out of date).

I don't know whether Health Canada records such specifics. Willy Baumgartner of Medivet Pharmaceuticals 403 652 4441 would probably have heard of any cases. Rob Currie and his students have worked a lot with vapour concentrations, especially in wintering buildings, a special case where human exposure would be a concern.

I kept enquiring for several years ending 4 years ago, and know of (heard third hand) one case of a splash in the eye from Saskatchewan (I don't remember exactly how: maybe an applicator gun? (flushed with water, a couple of days of discomfort and concern, no permanent damage); and several cases of blisters or skin burns from liquid contact or using non-waterproof gloves, and one case where a container dripped onto someone's jeans (so they had to remove and rinse them). In the pre PMRA approval assessment phase I did air sampling using special formic acid detecting Drager tubes, of exposure that someone would get using liquid onto absorbent paper towel on top bars, or inspecting treated colonies outdoors. The results were incorporated into the label precautions.

The prolonged-release methods would result in higher (intermediate is more accurate: less than during initial liquid application, but at say 3-5 days post application, higher than the much-reduced levels from liquid application) vapour concentrations in hives.

I have heard third hand of problems in the US, even one of someone bleeding from the ears (though I can't imagine what formic acid exposure a person could have that would result in that).

It may be true that if enough people handle a product capable of hurting them (formic acid, gasoline, laundry bleach) eventually someone will get hurt. PMRA decided that the precautions reduce the risk to an acceptable level. I wonder whether any of those who have been injured by bee hive use of formic acid were adhering to the precautions.

Kerry Clark, P.Ag., Crop Protection Specialist
B.C. Ministry of Agriculture and Lands
4th Floor, 1201 - 103rd Ave
Dawson Creek BC V1G 4J2
Tel. (250) 784 2559 Fax 250 784 2299
Toll Free: 1 877 772 2200

-----Original Message-----

From: Bob & Kaye Chisholm [mailto:bobnkaye@shaw.ca]
Sent: Tuesday, October 04, 2005 7:08 AM
To: Bill Ruzicka
Subject: Re: Formic Acid Injuries?

I've heard of none, and I've been using formic acid with mitegone pads spring and fall for the last three years without incident.

If Jim has made the statement, perhaps he can supply data or specific instances.

Cheers Bob Chisholm

-----Original Message-----

From: Ferguson Apiaries [mailto:ferga@hay.net]
Sent: Tuesday, October 04, 2005 4:12 AM
To: Bill Ruzicka
Subject: Re: Formic Acid Injuries?

No I have not heard of lung damage but I am sure it could happen. You should wear a respirator. I have burnt my fingers a couple of times. Nothing serious at this time.

In Canada it is cooler than Florida and if the temperature is low it is easier to handle, How serious was the Florida incident?

Bill

Ferguson Apiaries
Hensall, On <http://www.fergusonapiaries.on.ca>
http://www.oneplace.com/ministries/grace_to_you/

-----Original Message-----

From: Lafreniere, Rheal (MAFRI) [mailto:RLafrenier@gov.mb.ca]
Sent: Monday, October 03, 2005 11:49 AM
To: Bill Ruzicka
Subject: RE: Formic Acid Injuries?

As we discussed before, I do not know of any report injuries caused by formic acid used to control Varroa mites.

Salut!

Rhéal Lafrenière M.Sc. P.Ag.

Business Development Specialist - Provincial Apiarist

Manitoba Agriculture, Food and Rural Initiatives

204-545 University Cres.

Winnipeg, Manitoba

CANADA, R3T 5S6

PH. (204) 945-4825- FX. (204) 945-4327

Rlafrenier@gov.mb.ca

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