

Rodents and Rodent Control: Getting the Food Safety Challenges in Proportion



Dr John Simmons
Acheta Consulting Ltd



Acheta Consulting Ltd

- A UK-based pest management consultancy
- Founded in 2000, with 12 technical consultants, all of whom are experienced pest managers
- Principal services; independent inspection, audit and training, working mainly with large food manufacturing plants
- Principal market; food manufacturing (75% in the UK, 20% mainland Europe, and 5% further afield)

Rodent Activity in the Food Industry; How Widespread and Important is it?

Let's start with the easy question....

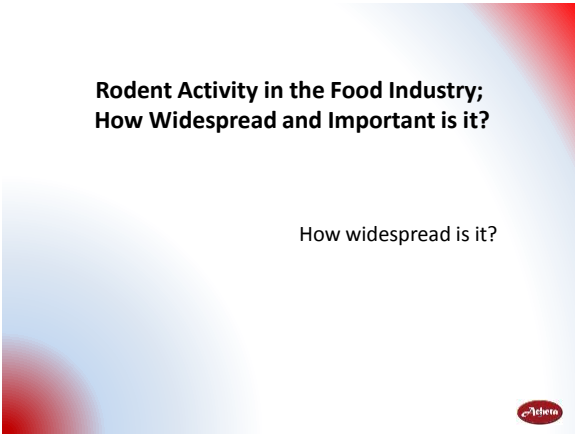
How important is it?





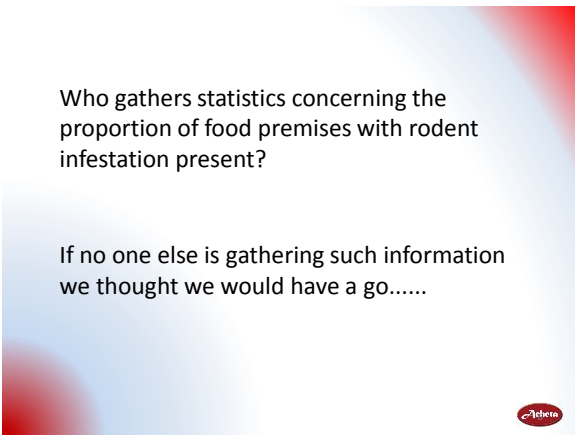
**Rodent Activity in the Food Industry;
How Widespread and Important is it?**

How widespread is it?



Who gathers statistics concerning the proportion of food premises with rodent infestation present?

If no one else is gathering such information we thought we would have a go.....

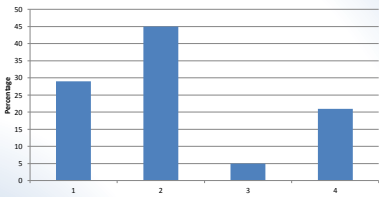


Using our own client base we reviewed rodent activity over the past 12 months and allocated each site to one of the four categories below:

- 1 - No internal rodent activity
- 2 - Occasional/ sporadic internal rodent activity
- 3 - Regular/ recurring internal rodent activity, due primarily to regular importation of rodents to site
- 4 - Regular/ recurring internal rodent activity, due primarily to infestation resident within the building structure



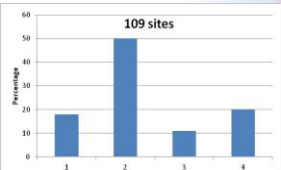
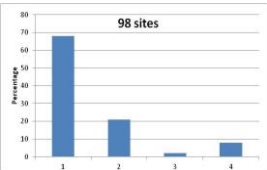
Breakdown by Category : 180 sites



- 1 - No internal activity
- 2 - Occasional/ sporadic internal activity
- 3 - Regular/ recurring activity due to regular importation
- 4 - Regular/ recurring activity, due to infestation resident within the building



We also asked a couple of UK pest control contractors to do the same thing



and a Scandinavian contractor



The conclusions:

- *House mice are an extremely important rodent pest species, probably THE most important species in the food industry*
- *Their importance is increasing*
- *A significant proportion (probably somewhere between 10-20%) of food manufacturing sites have a population of rodents that is resident within the building structure*



WHY?



There can only be three broad reasons for this:

1. Food manufacturers aren't fulfilling their obligations, with regard to building design, standards of sanitation and maintenance issues.
2. Pest control companies aren't fulfilling their obligations, perhaps because they either:
 - don't have the tools to do the job;
 - aren't allowed to use them to best effect;
 - don't understand what they are looking at.
3. Rodents haven't read the rules book.

I want to spend a few minutes examining options 2 and 3



Some of the principal threats to food safety

Potential contaminant	Physical, Chemical or Biological?	Intelligent?	Predictable?
Metal or glass	P	N	Y



Some of the principal threats to food safety

Potential contaminant	Physical, Chemical or Biological?	Intelligent?	Predictable?
Metal or glass	P	N	Y
Allergens	C	N	Y



Some of the principal threats to food safety

Potential contaminant	Physical, Chemical or Biological?	Intelligent?	Predictable?
Metal or glass	P	N	Y
Allergens	C	N	Y
Bacteria and viruses	B	N	Y



Some of the principal threats to food safety

Potential contaminant	Physical, Chemical or Biological?	Intelligent?	Predictable?
Metal or glass	P	N	Y
Allergens	C	N	Y
Bacteria and viruses	B	N	Y
Insects	B	N	Y



Some of the principal threats to food safety

Potential contaminant	Physical, Chemical or Biological?	Intelligent?	Predictable?
Metal or glass	P	N	Y
Allergens	C	N	Y
Bacteria and viruses	B	N	Y
Insects	B	N	Y
Rodents	B	Y	N

Of all of the potential threats to food safety rodents are **THE** most unpredictable



An unpredictable threat is best fought using a range of control options. From a regulatory viewpoint in Europe, in recent years, we have lost:

- All of the rodenticide concentrates
- All of the rodenticide contact dusts
- All bar one of the rodenticide contact gels
- 1 of only 2 non-anticoagulant active ingredients

In addition:

- Outdoor use of rodenticides is severely restricted
- Repro-toxicity labelling is likely to have an (as yet unquantified) impact, but will certainly result in increased use of lower strength rodenticides
- Traps and glue-boards are prohibited, or restricted to some degree, in many European countries



On top of regulatory restrictions we have a further layer of restriction imposed by the food industry itself:

- Prohibition on the use of toxic rodent baits, at least in production or storage areas where open food is present, with some standards prohibiting use everywhere
- Requirement to use tamper-resistant monitoring stations, which are secured to the building structure
- Prohibition on the use of break-back traps, or a requirement to house these within tamper-resistant housings.



Could any of these restrictions impact adversely on the efficacy of rodent control?

If so, then does this compound an already worrying problem?





- Electronic monitoring system which detects rodent movement using PIR detectors
- Each activation triggers an email alert

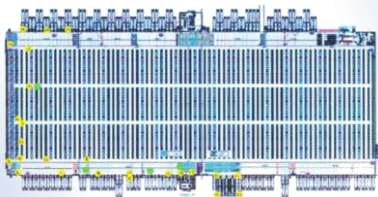


- We have used the system as part of troubleshooting rodent investigation work at several sites, and found it to be a reliable monitor of rodent presence
- We decided to test it against conventional baits and traps.....



The Scenario

- A retail distribution centre (of just under 1m sq feet)
- Established long-standing mouse infestation
- We selected 25 locations, some of which had no evidence for mice, and some where evidence was plentiful





At each location we placed:

- A plastic bait station with non-toxic paste bait
- A cardboard bait station with non-toxic paste bait
- A plastic trapping station containing a break-back trap baited with a commercial rodent 'attractant' (Provoke)
- A GTO detector, on upturned guttering, with non-toxic bait and UV tracking dust underneath

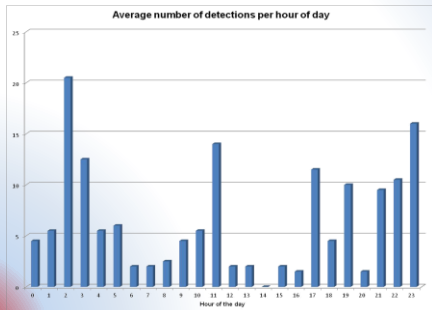


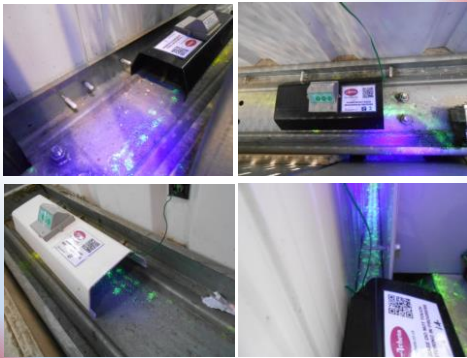
The trial ran for two weeks

- Activations were recorded by 9 of the 25 GTO detectors.
- These varied from a single activation, to 105 at one location
- At the 9 locations, evidence of mice moving through tracking dust supported the activation; *no false positives*
- At the 16 locations, no rodent movement was observed through tracking dust; *no false negatives*



The pattern of activity provided further evidence to support the validity of the results

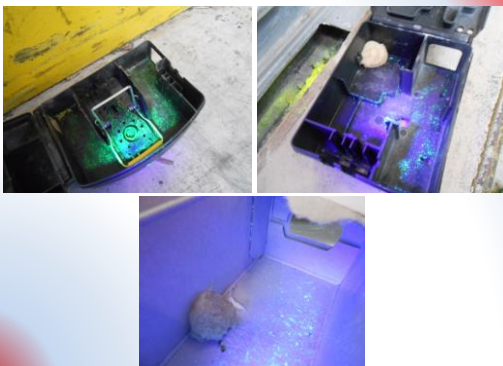




• What about the baits and traps?

- On the bait under the GTO guttering we found 1 full and 1 part take
- In the plastic bait stations we had no takes and evidence for mouse entry (UV footprints) in only 1 station
- In the cardboard bait stations we had 1 part take and evidence for mouse entry within only this 1 box
- Within the trapping boxes we had no catches, and tracking was observed only within a box where the trap had been accidentally activated









The conclusions

- Mice were deliberately avoiding bait and trap stations
- They were even avoiding non-toxic bait presented in a non bait-station setting; under the lengths of guttering

Should we be surprised?

Some quotes from people who know...

“Mice are reported to be inquisitive feeders, appear to feed randomly and have no marked neophobic response in relation to food sources. Results from our trial suggest that this is not always the case.”

Professor Gai Murphy, University of Salford



Some quotes from people who know...

“Not all mice in a colony are ‘curious’. Some mice are like rats, they may avoid new objects such as traps and bait boxes completely. All control programmes should account for curious and non-curious mice.”

Dr Bobby Corrigan, RMC Pest Management Consulting (USA)



**To finish:
3 slides of questions.....**



- *Are we reaping the rewards of 40+ years of intensive selection pressure on mice?*
- *Is what we observed a genetically-based response to ignore, or deliberately avoid, the new objects that we place in their environment?*
- *Are we approaching (or have we reached) the point where some mouse populations may no longer be controlled using the products that we have available?*



- *Are the legal/ regulatory constraints on what we can use, and how we use it, impacting adversely on our ability to control rodents?*
- *Do the regulators care what might happen should we lose products that are of critical importance to controlling rodents in food handling environments?*



- *Do those who write the pest management elements of food safety related standards have sufficient understanding of the practicalities of managing rodents in complex environments?*
- *Are they imposing an unreasonable layer of further restriction on top of already limited options?*
- *Are the techniques used to control rodents now considered, at least by some in the food industry, to be a greater food safety threat than the rodents themselves?*



**Be careful what you wish for,
and familiarise yourself with
*The law of unintended consequences***

