

July 2017

1. Examples of new air decontamination technique

1.1. The following example shows how grossly contaminated air in a 30,000 cubic feet warehouse can be decontaminated within hours with material and equipment cost less than £150 and with application equipment purchase price of less than £200

1.2. The decontamination process can be used for:

- 1.2.1. Asbestos (subject to legal issues)
- 1.2.2. Soot's and fire damage
- 1.2.3. Mould, Biological fragments
- 1.2.4. All dust and particulate matter
- 1.2.5. Drying out flood damaged buildings
- 1.2.6. Building sites
- 1.2.7. Odour

2. Note

The products are available in the UK but require training prior to purchase.

3. Summary

- 3.1. The following study shows the success of chemical air decontamination in terms of speed and cost.
- 3.2. The alternative to the air scrub process is the industry standard HEPA filtration through Negative pressure machines.
- 3.3. The Health and Safety Executive (HSE) have undertaken a scientific study of HEPA (NPU)
- 3.4. The HSE study concludes that stratification of particles means that successful air cleaning of air borne contamination is almost impossible using floor NPU HEPA units

4. Experience of the asbestos industry

4.1. The asbestos removal industry has been using NPUs for decades and their industry representatives (ARCA) have published the following with specific reference to HSE papers and evidence.

4.1.1. ARCA <http://www.arca.org.uk/download/ARCA%20GN006-V0715Air%20management%20in%20asbestos%20enclosures.pdf>

4.1.2. HSE <http://www.hse.gov.uk/research/rrhtm/rr988.htm>

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5. But it's not asbestos?

Air decontamination is the removal of particles which are considered a risk or hazard,

5.1. These particles can reflect many risk criteria including:

5.2. Particulate size with <7 micron being recognised as most hazardous as the human body has no defence against such size.

5.3. Aerodynamics and weight, which will dictate how long they can remain airborne and distance they can travel from source

5.4. The toxic or allergic components of the particulate

6. Size doesn't matter

It doesn't matter what the size or composition of airborne particulate. The Control of Substances Hazardous to Health (CoSHH 2006) legislation states airborne contaminants must be reduced to the lowest practical level regardless of project size or cost and most importantly that Personal protective Equipment (PPE) must be seen as a last resort. In fact HSE and CoSHH recognise even dust as a respiratory sensitiser and is therefore regulated

7. See some examples of Negative Air Machines (NAMs) or HEPA NPUs

7.1. <https://www.linkedin.com/pulse/air-cleaning-devices-fraudulent-claims-greg-weatherman?published=t>

7.2. The Institute of Cleaning and Restoration have in their updated 3rd Edition 2015 recognised the need to remove airborne contaminants such as mould spores fragment and mycelia, this of course also covers dust and soot's.

8. Time and manpower

The following example shows data logged evidence of contaminated premises being air cleaned overnight (24 hours) by one man doing the required work in less than 2 hours

9. Scope of Instruction

9.1. Reduce airborne contamination to less than ambient

9.2. The following data logged photos show time and date stamped photos of a very contaminated building.

9.3. Each page shows before and after particulate counts as measured on a 6 channel particle counter

10. Significant time cost issues

10.1. The product cost to complete these works was less than £150

10.2. The time to complete these works to decontaminate approximately 30,000 cubic feet, less than 2 hours

11. Air sampling results

It can be seen these products dramatically reduced airborne contamination overnight with major improvements within hours.

Table 1 Pre Treatment 22/07/2017

Particulate μ	Ambient	Ground floor	Bottom stair	Workshop
.3	8188	20365	20494	10332
.5	3742	9467	9804	4790
1.0	651	2097	1995	1010
2.5	146	615	553	223
5.0	23	231	227	77
10	10	154	160	45
Photo	1	3	5	7

Table 2 Post treatment 24/07/2017

Particulate μ	Ambient	Ground floor	Bottom stair	Workshop
.3	10246	8876	9887	4784
.5	2839	2002	2293	1103
1.0	409	258	305	163
2.5	76	46	43	22
5.0	26	7	11	7
10	9	6	6	6
Photo	2	4	6	8



1 Ambient prior to internal treatment



2 Ambient post internal treatment



3 Ground floor pre treatment



4 Ground floor post treatment



5 Bottom of stairs pre treatment



6 Bottom of stairs post treatment



7 Workshop pre treatment



8 Workshop post treatment

**12. CV Biography of author Jeff Charlton jeff@builidngforensics.co.uk
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- 12.1. I have been engaged in worldwide disaster recovery involving flooding, explosion, contamination and fire for over 25 years.
- 12.2. I have as principle consultant been responsible with achieving 2 Disaster Recovery of the Year" awards.(1999-2001) I have attained the highest internationally recognised qualification as:
- 12.2.1. Certified Restorer, **CR**
 - 12.2.2. Water Loss Specialist, **WLS**
 - 12.2.3. Certified Mechanical Hygienist **CMH**
 - 12.2.4. Accredited Associate Chartered Institute of Environmental Health
 - 12.2.5. Certified Indoor Environmental Consultant through American Council of Accredited Certification (ANSI-ISO) **IEH (Indoor Environmental Hygienist)**
 - 12.2.6. Senior Tech and Hon Fellow BDMA in the UK and founding chairman.
 - 12.2.7. Applied Microbial Restoration Technician IICRC **AMRT**
- 12.3. I have attained a level 1 certification in Infra-red thermography.
- 12.4. In 2012 I wrote and presented a seminar regarding a CBR terrorist attack on mainland Britain in association with the Cabinet Office, Health Protection Agency and Government Decontamination Service, Environmental Protection Agency and this involved the use of a WMD based on a toxic mould recognised as a WMD.
- 12.5. In 2013 I was engaged by British Damage Management Association to write and collate the industry fire and flood restoration standards and was part of the British Standards Institute technical committee writing the Industry Guidelines and Standard PAS 64 which was ratified by the Association of British Insurers.
- 12.6. In 2013 the industry voted and awarded me a Lifetime Achievement award presented by Contingency Insurance and Risk and I also won two training awards for Counter terrorism CBR and disaster recovery.
- 12.7. In 2013 wrote and presented a desk top and site initiated CBR terrorist attack on London in conjunction with Cabinet Office and Government Decontamination Service.
- 12.8. In 2014 I was asked by the House of Commons all party parliamentary group chair Jonathan Evans MP to report on the failures of insurers and contractors flood restoration efforts and failures to apply PAS 64 the industry code of best practice.
- 12.9. I have an ONC and City Guilds in Mechanical Engineering
- 12.10. Contingency Insurance and Risk awards 2015 short listed for innovative product of the year with seven CPD training courses for client use in disaster recovery, counter terrorism and CBR and biological contamination of buildings following water damage and flooding.

13.

14. Signed

Jeff Charlton AACIEH Hon Fellow BDMA

Date

