



THE JOURNAL OF THE CONCRETE REPAIR ASSOCIATION

ISSUE NO. 15

HAND-ARM VIBRATION SYNDROME - What's the current position?

By: Walid Hussain, Product Manager, Hilti (GB) Limited

In the May 2004 edition of *Cracking Matters* (Issue 13) we looked at hand-arm vibration syndrome (HAVS). The article addressed the symptoms, causes, legal responsibilities and required actions to ensure tool users and companies are protected from impending European Union legislation.

The feedback received was tremendous and when coupled with the positive steps taken by the Concrete Repair Association, it shows that the industry is really setting itself up to tackle the issue.

when coupled with the positive steps taken by the CRA, it shows that the industry is really setting itself up

The matter is important to everyone; CRA contractors, Engineers and clients alike. CRA contractors must seek ways to comply with the legislation and protect their employees, engineers must be aware of possible project restrictions and clients need to appreciate the possible negative cost implications.

Now, with July 1, 2005 (the date when the new European Law becomes fully operational) looming on the horizon, it is time to take stock and look at the most frequently asked questions.



Medium-duty breaking machine

How does the new EU legislation work?
Vibration exposure limits will be broken down into two parts – Exposure Action Value A(8) and Exposure Limit Value A(8). The exposure limits on both elements is calculated by the vibration level of the tool and how long it is used for. For example, an operative carrying out an operation using a tool that has a vibration level of 2.5 m/s² can work with the tool for eight hours before reaching Exposure Action Value A(8), providing the risk is eliminated or reduced to the lowest level reasonably practical.

If the vibration level of the tool is higher the work time must be reduced accordingly or there must be a programme to control the exposure up to the Limit Value A(8) which cannot be exceeded.

What is the difference between laboratory vs. real-life testing?
It is imperative, when working out both the Exposure Action Value A(8) and Exposure Limit Value A(8), that the vibration figures used are based on real-life test results. Why? Because laboratory testing fails to imitate real-life conditions.

A recent study at Loughborough University revealed that various breakers had vibration levels of four times that of the manufacturer's published figures and that the best performing tool could break seven times more concrete than the worst, before reaching the daily vibration limit. This equates to the productivity of breaking 594kg a day against 81kg for the least efficient model.

This may well create some doubt in your mind and if so, it is suggested that you consult the manufacturer directly for further details. (Continued on page 2)

MORE 'DISTRIBUTOR' MEMBERS FOR CRA

Three new concrete repair and protection product distributors have been welcomed in to membership of the CRA since the organisation created a new membership category of 'Specialist Distributors'.

Resapol Limited, who became the Association's very first member in this category, has recently been joined by both Buildspan Limited and Adawall Construction Chemicals.

The new 'Distributor' membership category is open to all organisations able to demonstrate that a significant proportion of its business is in the Concrete repair industry. Other entry criteria includes having a sound financial base, maintaining appropriate levels of staff training, technical and on site support services (if required). New members must also operate with due regard to the transportation and storage (i.e. temperature controlled warehousing) requirements set out by the relevant manufacturer, demonstrate a commitment to maintaining a specified product range and to take a proactive role in the supply chain of a Concrete Repair project. Distributor members will have no voting rights but member's representatives are able to take an active role in the activities of the association.

The CRA was originally formed in 1989 by specialist contractors to set high standards of workmanship and technical competence in a hitherto fragmented and unregulated industry, in the mid 90s specialist material manufacturers were also invited in to full membership.

INSIDE

- Chromium VI Directive
- Smaller contracts trend
- 'Faulty towers'
- New H&S Committee
- CRA member list
- FREE tendering facility

HAND-ARM VIBRATION SYNDROME

- What's the current position?

(continued from page 1)

What more can be done on-site to reduce HAVS whilst retaining productivity?

The four main areas to consider are the manufacturer's support structure, onsite vibration values, an individual tool's performance and worker training. Once addressed, these will ultimately tackle the issue of productivity and workmanship quality.

Hilti, for example, offers onsite vibration measurement and will suggest alternative working methods. The 'Hilti Solution' incorporates product selector charts, complete training programmes and high quality tools and consumables built to reduce the HAVS risk.

Its latest innovation, the TE706AVR, was designed and built with all main factors in mind. A medium-duty 1200W breaking machine, the new technology includes an Active Vibration Reduction (AVR) system which results in 66 per cent less vibration than similar conventional tools and a brushless 'switch reluctance' motor to increase efficiency and tool lifetime.

How can you find out more?

All HAVS aspects are addressed in greater depth in Hilti's booklet entitled 'Reduce HAVS Health Risks'. It is available as a free download on www.hilti.co.uk by ringing 0800 886100, or by completing the attached Fax-Back sheet.

READER ENQUIRY: 1501



Trend toward smaller concrete repair contracts

Survey findings, produced by the CRA, relating to the concrete repair market for the period between January and June 2004, indicate that the total value of work completed by members was up by almost 12% on the same period for 2003.

Figures indicate that during the six-month period, the total contract sales value for the entire UK specialist concrete repair market is estimated to have been worth in the region of £107m.

Compared with findings for the first six months of 2003, however, the figures indicate that whilst CRA members were successful in winning significantly more contracts (680), the total value of the contracts (£36.3m) had fallen slightly, indicating a marked trend towards smaller contracts being let.

For the first time in four years, the figures also reveal a reduced number of concrete repair related work enquiries

received by CRA contractor members. With regard to the business outlook for the next twelve months, however, the survey indicated that most CRA members expected work volumes and business margins to either increase, or to remain stable.

Figures provided by the Association's specialist product manufacturing members showed increases in the sales of sprayed mortars, fairing coats and anti-carbonation coatings, a reduction in sales of flowable mortars and almost identical sales of hand placed mortars, compared to the same period in 2003.

Between them, CRA members account for the vast majority of concrete repair work in the U.K. All are listed in a handy one-third A/4 size Members Directory, copies of which can be obtained from: CRA, Association House, 99 West Street, Farnham, Surrey GU9 7EN. Tel: (01252) 739145. Fax: (01252) 739140. Email: cra@associationhouse.org.uk Website: www.cra.org.uk

CRA members meet new Chromium VI Directive

Concrete Repair Association manufacturing members are currently finalising new formulations for their cement based repair materials in order to meet new restrictions on the amount of water soluble chromium VI allowed in products that contain cement after hydration, such as mortars, grouts, adhesives, etc.



The move follows close liaison with the Health & Safety Executive (HSE), the British Cement Association (BCA) and other representative bodies within the construction industry.

The Control of Substances Hazardous to Health (Amended) Regulations 2004 (COSHH) now prohibit the supply or use of cement, or cement based preparations, that have a water soluble chromium VI concentration of more than two parts per million. The legislation has been introduced to help prevent allergic contact dermatitis; a potentially serious condition that can lead to permanent disability and can occur when wet cement containing chromium VI comes into contact with the skin.

CRA manufacturers now have to add a reducing agent to their products to bring chromium VI concentrations down to permitted levels. In addition, they must provide information on safe shelf life, since the reducing agent is only effective for a finite period.

It may take time, says the CRA, for all 'undosed' products to work their way through the system. Users are therefore reminded to continue to avoid all skin contact with cement and cement products, by ensuring the use of the correct personal protection equipment at all times. The Association also reminds all users that even cement that is properly dosed with reducing agent continues to have the potential to cause ill-health, due to its irritant effects and highly alkaline nature.

A spokesman for the HSE commented "By the simple step of reducing the levels of chromium VI in cement and cement products, these Regulations should make allergic contact dermatitis, caused by skin contacts with wet cement, a thing of the past. The fact remains, however, that wet cement can still cause serious burns if it comes into contact with the skin. So, whilst this change is good news, it does not mean that cement is now 'safe'. Our message to users is ... treat this material with respect if you value your skin"

Further information can be obtained from: CRA, Association House, 99 West Street, Farnham, Surrey GU9 7EN. Tel: (01252) 739145. Fax: (01252) 739140. Email: cra@associationhouse.org.uk Website: www.cra.org.uk

ALL ROUNDERS

Whether it be a listed building, a sea defence wall or a tower block, from £1k to £1m, Kafften Ltd has the ability and experience you are looking for. Catering to the external refurbishment sector, we specialise in concrete, brickwork and stonework repair, external wall insulation and remedial wall ties. CRA Members, ISO 9001:2000 and CHAS accredited, Kafften Ltd are the well rounded, all rounders.

For more information call: 01787 237980. Email: sarah@kafften.co.uk or visit our website: www.kafften.co.uk



ENQUIRY NO: 1502

GALVASHIELD - TRIED TESTED AND PROVEN

Galvashield is the only corrosion control system for concrete repair with BBA certification. So, if you want to prevent spalling of reinforced concrete, Galvashield is a solution you can trust.

Galvashield anodes corrode preferentially to the reinforcement, neutralizing corrosion cells and protecting the concrete. The anodes are simply tied directly onto the reinforcement within patch repairs or inserted into drilled holes in the concrete. Galvashield anodes are self-powered, maintenance free and last up to twenty years. Galvashield has successfully protected hundreds of car parks, bridges and buildings since Fosroc launched the system in 1998, a robust track record now backed by BBA certification. For further information about a corrosion control system that works and keeps working, contact Fosroc on: phone: 01827 265127 fax: 01827 262444 e-mail: uk@fosroc.com



ENQUIRY NO: 1503

"TELL ME WHAT'S WRONG WITH FAULTY TOWERS"

By David Bowen Bravery
Consultant, Alan Conisbee and Associates

With enough technical literature on concrete repair now available to sink a battleship, it never ceases to amaze me how the recommendations from the Building Research Establishment (BRE), the Concrete Repair Association (CRA) and a host of learned societies and committees are totally ignored by many people. We seem to have an information overload, which is too daunting for most and thus, ignored by the majority. There is no single document which has become 'the gospel', although the new Eurocode on Concrete Repairs should overcome this situation. Please note, however, the emphasis on 'should'!

It is an all too common situation for Engineers (and Contractors) to be landed with the question, "Tell me what's wrong with Faulty Towers and how much will it cost to put it right - oh, and I need the answer by 4 o'clock tomorrow afternoon, please"!! If it is suggested that perhaps some basic representative testing might

be a good idea, this is almost always turned down flat, the most common responses being:

- We haven't time.
- We haven't any money for that.
- It's not necessary.

- You, Mr. Engineer, are the expert and surely you know what to do.

Well, I have news for people like this. Engineers do not have X-ray eyesight. Over more than 25 years of looking at reinforced concrete (RC) buildings, I still can't tell what depth of carbonation there

is, or for that matter what cover the reinforcement has. No engineer, no matter how experienced, can diagnose the true extent of likely deterioration of a building, until such time as some basic test results are available.

We can, of course, make a guess based on our past experience, but that is all it is - a guess. The problem is that some guesses are likely to be wrong; either unduly pessimistic, or more often optimistic. Such 'guesstimates' may be highly qualified when given, but they tend to become enshrined in committee reports and the like and woe betide any Engineers who come back 3 months later saying "we didn't allow enough for this."

At the very least, simple site testing to determine basic durability characteristics is essential. Without this testing one is very likely to be treating the symptoms rather than the causes. Often such testing really need not be as daunting a prospect as many of the recent publications make out. Assuming that the Engineer is

experienced in RC deterioration, all that is needed in most situations concerned with blocks of offices or housing, are simple cover, carbonation and chloride tests, albeit

more sophisticated tests may be required on other structures, such as car parks, bridges, jetties, etc.

Armed with these concrete test results, one can develop meaningful, costed repair strategy/options to suit the client's needs. These would be based on the

envisaged future use of the building and the required life to the next major maintenance intervention. Another important aspect is that many clients, because of limited budgets or future plans for the use of the building, do not want full blown repair and preventative treatment, but more palliative treatment to alleviate health and safety issues, or to 'tart it up' before disposal. Accordingly, repair specifications can vary dramatically.

Another word of warning, however. Before even thinking about concrete repairs, which after all are mostly purely 'dentistry' on the external 'body', take a very good look at the building's basic structural stability. This is often completely overlooked and many a housing estate has had millions of pounds spent on refurbishment, only for it to be found at a later date that there are very serious structural issues, not even considered or appreciated at the time of refurbishment. Unfortunately, but perfectly understandably, concrete repair is often the 'poor relation' in housing refurbishment, which tends to spend most of the budget on kitchens, bathrooms, windows and re-roofing. The budget for concrete repair is often derisory. As a consequence, a Structural Engineer is often not engaged at all, or if he is it is often at a very late stage, when all the major decisions have been taken and all

that is required is 'a quick concrete repair specification'. However, some structures, for example large panel system (LPS) blocks, need to be very carefully looked at from a structural standpoint. Comprehensive archive searches are essential to determine how such LPS blocks are constructed and whether they comply with mandatory regulations and modern day recommendations for their appraisal. If you don't have an Engineer on hand when the conceptual work is being undertaken, these issues will not be raised. After all, many Architects, Surveyors and Electrical Engineers have seldom heard of LPS blocks, let alone know what the structural health and safety issues are surrounding them. The Ronan Point collapse happened some 40 years ago (and a lot of water has passed under the bridge since then!), but the problem is still very relevant today.

A good structural Engineer should be able to provide 'added value' to a repair and refurbishment project. After all, an engineering solution rather than a materials solution will often be far more cost effective in the long run.

The lesson to be learned from this is; in the absence of concrete testing and specialist structural engineering input, proceed at your peril.

READER ENQUIRY: 1508

Well, I have news for people like this. Engineers do not have X-ray eyesight

NEW DEGUSSA LITERATURE FOR CONCRETE REPAIR SOLUTIONS

Degussa Construction Chemicals (UK) has published two new colour brochures outlining its structural repair solutions for concrete, which include products within its key brands EMACO, MASTERSEAL, MBRACE and PROTECTOSIL CIT. The 8-page 'Structural Repair and Protection' brochure covers Degussa's complete concrete repair range, including composite strengthening, cathodic protection and corrosion inhibition, as well as concrete replacement systems and façade refurbishment. The accompanying four-page 'Concrete Repair Solutions' brochure is designed for easy use on site and identifies suitable products for specific structural problems simply through a diagram and key. Said Mike Threadgold, Product Manager Construction Products and currently Chairman of the Corrosion Prevention Association, "These brochures are an ideal introduction to Degussa's concrete repair range, which offers a structured approach to solving the problems of concrete degradation with integrated, compatible materials." For copies, call Mike Threadgold at Degussa Construction Chemicals (UK) on 0161 794 7411, or e-mail mike.threadgold@degussa.com



ENQUIRY NO: 1507

WEBER BUILDING SOLUTIONS



Following technical support and guidance from **weber building solutions**, the integrated refurbishment of five high rise residential blocks in Bradford, on behalf of the Bradford Community Housing Trust Group, is now underway. Repair of the current concrete structure is being carried out with the BBA approved 'weber multisfix' concrete repair system. Upon completion of repairs, the 'weber:therm XM' External Wall Insulation system will be installed with a 'weber:plast TF' render finish, which will protect the individual blocks by keeping the structure warm and stable, provide an attractive new façade and bring all five buildings up to current thermal regulations. For more information call: 08703 330070

ENQUIRY NO: 1505

ADDED-VALUE CONCRETE REPAIR

When adopting standard methods of making good a damaged, spalled and/or worn concrete floor, deck, hard standing, balcony, or other horizontal concrete surface, problems with 'down time' and long-term performance occur.

Any material that overcomes these inconveniences provides added-value benefits to the contractor and to the client, which is why Tamworth based flooring and concrete repair product manufacturer **Instarmac Group plc** developed Cemfloor FTC fast set patching concrete. Cemfloor FTC comes in 4mm and 10mm aggregate grades, to accommodate depths of between 10mm and 150mm. Its high early strength gain means that, subject to ambient temperatures, repaired areas can be opened to foot traffic in just four hours. It is free of aluminium, iron, carbon and chloride, eliminating any possibility of corrosion due to exposed reinforcement. More details can be obtained from Instarmac, Tel: 01827 872244. Web site: www.instarmac.co.uk



ENQUIRY NO: 1506

NEWS from CRA Members

Use the enclosed Fax-Back to obtain more information

ACKNOWLEDGED EXPERTS ISSUE NEW BROCHURE

A new brochure, revealing the company's extensive nation-wide concrete surveying services, has been published by **CRL Surveys**, a division of specialist main contractor **Concrete Repairs Ltd (CRL)**. The publication provides information relating to the company's unique and fully independent palliative, indicative, statistical and full survey procedures, as well as other reporting capabilities such as load testing, structural detailing and fire damage. In addition to identifying defects, CRL Survey's services include costed options for repairs and tender documents for the works, thus enabling clients to quickly appreciate the problems, to allocate budgets and issue tenders.

For copies visit CRL's new web site at: www.concrete-repairs.co.uk, telephone: 020 8288 4848, or email: mail@concrete-repairs.co.uk



ENQUIRY NO: 1504

NEW COMMITTEE TO TRACK H&S MATTERS

In order to evolve a common approach to the increasingly important subject of health and safety in the concrete repair and allied industry, the CRA has recently established a new Health & Safety Committee, comprising individuals from CRA contracting and manufacturing members who are responsible for such matters on a day-to-day basis.

The Association believes that an industry stance on H&S issues would prove of assistance to many clients, engineers and specifiers, as well as

being more effective than individual members working in isolation. The new initiative will provide industry guidance, will promote H&S awareness and 'Best Practice' and will assist with compliance to H&S Standards.

In addition to being reactive to proposed H&S matters, the Committee also intends to take a pro-active stance on many topics facing the repair and protection of concrete.

The Committee, which will report directly to the CRA Executive, is currently considering the new European

Directive on Chromium VI (see page 2), a naturally occurring content in cement that can cause skin irritation and allergic contact dermatitis to some operatives, hand-arm vibration involving exposure levels to certain types of equipment (see page 1) and the CHIP 3 Regulations, which involves matters relating to the disposal of hazardous waste, exposure to silica, noise regulation and working at height. In addition, the group intends to collect and collate accident data on a regular basis.



Such information would assist in providing an indication as to the specific needs of future training.

Invite tenders for your project free of charge

In order to augment conventional methods of inviting tenders for upcoming repair and refurbishment projects, the CRA now has a facility on its web site that allows clients to post their tender notices on it.

The idea is intended to supplement, not replace, conventional methods of advertising such information and is currently available to all Clients, Authorities and Housing Associations. The facility is completely free of charge and since the pages are regularly visited by CRA contractors and material manufacturer members, clients can be assured that their messages, when specific to concrete repair work, will be directly received by interested companies specialising in this market sector.

The on-line 'tender placing procedure' is very simple and those interested should visit www.cra.org.uk

Many organisations, especially Local Authorities and Housing Associations, use the construction journals to publish advertisements advising of forthcoming works and inviting tenders. The CRA facility is simply another means of 'spreading the news'.

The CRA web site also now includes member companies' product and project news stories. Interested visitors can access the information directly from the CRA 'Home Page'. The facility will be continuously updated to provide an interesting insight into the members many and varied activities.

CONCRETE REPAIR ASSOCIATION
The Home of Concrete Repair

HOME | LIST OF MEMBERS | PUBLICATIONS | STANDARDS | CHAIRING HISTORY | MEALWAYS | PRODUCTS | INFORMATION | CODE OF PRACTICE | NEWSLETTER | LITRA | TRAINING | CRA MEMBERS | **AS A SUBJECT SPECIALIST**

The Concrete Repair Association - promoting excellence in concrete repair.
Click on the links above for details of CRA Members (in a searchable database), downloadable documents and other information, sign up for our newsletter to get the latest technical updates and news.

CRA: the Concrete Repair Association 01/06/2004
Association House, 99 West Street, Farnham, Surrey GU9 7EN
T: 01252 739145 F: 01252 739149 E: HERE

'CRACKING MATTERS' is published by the Concrete Repair Association (CRA), Association House, 99 West Street, Farnham, Surrey GU9 7EN. Tel: (01252) 739145 Fax: (01252) 739140 Email: info@associationhouse.org.uk Website: www.cra.org.uk

Comments and opinions expressed in the articles provided are those of the Author and not necessarily of the CRA.

Rights reserved. No part of this publication may be reproduced or transmitted in any form, without prior written consent of the publishers. Fifteenth edition: 23. 05. 05

Contractors: Telephone:

APA CONCRETE REPAIR SPECIALISTS	01422 379640
ASL CONTRACTS	01264 335564
ALFRED BAGNALL & SON	020 8311 3910
BALVAC LTD	01773 542600
CEMPAS WATERPROOFING & CONCRETE REPAIRS LTD	020 8654 3149
CONCRETE REPAIRS LIMITED	020 8288 4848
CONNAUGHT PROPERTY SERVICES LTD	01293 649200
DEW CONSTRUCTION LTD	0161 624 5631
FREYSSINET LTD	01952 201901
GUNITE (EASTERN) LTD	01480 466880
KAFFTEN LTD	01787 237980
MACKENZIE CONSTRUCTION LTD	0141 633 5555
MAKERS LTD	01462 477333
MCGARVEY CONSTRUCTION LTD	0141 848 7555
QUADRIGA CONCEPTS LTD	01606 330888
QUICKSEAL SPECIALIST CONTRACTORS	020 8530 6808
RENOCON LTD	020 7538 5492
REPEX LTD	01435 866666
ROK STONECARE LTD	01908 679222
STRUCTURAL RENOVATIONS LTD	01753 825511
TOPBOND PLC GROUP	01795 414050
YOLDINGS LTD	01323 442288

Manufacturers: Telephone:

DEGUSSA CONSTRUCTION CHEMICALS	0161 794 7411
EXCHEM MINING & CONSTRUCTION	01773 540440
FOSROC LTD	01827 262222
INSTARMAC GROUP PLC	01827 872244
MC BUILDING CHEMICALS	0121 789 8333
RONACRETE LTD	01279 638700
SIKA LIMITED	01707 394444
TECROC PRODUCTS LTD	01827 711755
WEBER BUILDING SOLUTIONS	01525 718877

Distributors: Telephone:

ADAWALL CONSTRUCTION CHEMICALS	0117 986 1766
BUILDSPAN LTD	01252 527000
RESAPOL LTD	01942 609001

Associates: Telephone:

BIRMINGHAM CITY LABORATORIES	0121 303 9300
THE CONCRETE CONSULTANCY 2000 LTD	01707 647266

Full details of each member company is included on the CRA's all-embracing CD-ROM. The CD-ROM also contains the Association's hugely successful audio-visual programmes entitled 'The route to a successful concrete repair' and 'Structural strengthening with composites', together with other useful CRA guidance notes, a bibliography of allied publications and a list of useful addresses. The CRA's Method of Measurement for concrete repair is also included as a 'Word' document to enable Bills of Quantities to be produced as required.



A copy of the CD-ROM is available free of charge via the enclosed Fax-Back, or from Association House, 99 West Street, Farnham, Surrey GU9 7EN. Tel: (01252) 321302. Fax: (01252) 333901. Email: cra@associationhouse.org.uk

CURRENT CRA MEMBERS