The Chairman, Warwick Adams of Interserve Project Services introduced the family double act of Drs. Cooke and Cooke with the comment that, as his daughter had just joined the profession, BHSEA might be treated to a grand production from the "Adams Family" at some time! As he handed over to Morris Cooke, Warwick said that he shouldn't need any introduction whatsoever as he has been our President for about 28 years! He went on to say that Roger Cooke had obtained considerable experience of his subject whilst working with GKN and the NCB.

Advances in Contact Dermatitis by Dr.Morris Cooke

Morris Cooke presented the first paper at the December meeting. The subject was 'Recent Advances in Contact Dermatitis' but he observed that there are not many scientific advances of importance other than to specialist dermatologists and/or scientists. The advances have been more in the improvement of current techniques and the detection of new allergens, the current status of patch tests, skin moisture levels, the differential diagnosis of irritant and allergic contact dermatitis and the study of latex allergy and UVL effects.

There are no reliable statistics on the incidence of occupational contact dermatitis in the general population. The only data for the general population is absence certification certifying a case of dermatitis. This seems to have fallen unlike that due to musculoskeletal disorders that have increased, but this may be more due to the ease or difficulty of certification rather than a true major difference in incidence.

New allergens or the detection of the use of known allergens, not previously used in industry, may be naturally occurring as in plants or they may occur as synthetics. There is no general difference in the relative risk. These may be detected in industry when they should be referred to a suitable specialist, ideally through an Occupational Health team or Consultant. Ideally, all companies should employ such support. Small firms can arrange this through the NHS Plus network or by contact with local occupational health companies or hospital services, which may contract for such support, the details some of which may be available through the Society of Occupational Medicine – www.som.org.uk. Such services are not available free under the NHS and appropriate fees will generally be charged.

New allergens may also be detected by dermatologists in their patch test clinics. The Journal "Contact Dermatitis" is the journal generally used to report such findings. They may of course reflect the special interests of the dermatologist or the principle industries in a particular area. Some unusual situations can arise. A recent case was thought to be related to computer mice, and was found to be due to cobalt and possibly other compounds in the resin used in manufacture. This could be important since we find that cobalt can occur occasionally in association with nickel and chrome allergy, both of which are difficult to avoid.

It is important that both the implementation and interpretation of patch tests should only be undertaken by those experienced in the principles involved and in correlation with the history of the patient, therefore usually being by a dermatologist with such experience. It is equally important to correlate any findings with the history of the patient. A true positive result may indicate the patient's allergenicity to the test material, but may not be the cause of that patient's dermatitis. Likewise, negative results in one patient does not preclude positives in others and the material may be a significant sensitiser in the general population. The medical and exposure history of the patient must be taken into account.

Skin moisture levels have been the subject of considerable interest in recent years, both in dermatological and cosmetic fields. It has been claimed that dermatitis may be associated with excess loss of fluid from the skin measured by various test methods, the most common being the so-called Trans-Epidermal Water Loss (TEWL). Excess loss certainly increases the lines and dryness of the skin and cosmetic benefits of suitable skin moisturisers are of definite value in this respect. The proof of their universal value in preventing dermatitis is less proven, but for many years we have felt that "afterwork preparations" are of value and these are associated with the control of TEWL.

A recent study has show that to be fully efficient, such moisturisers should be applied rapidly after drying the skin, ie. Ideally only a few seconds after washing and drying the skin. They should, therefore, be easily available at such times. *Most of us consider them to be more valuable than barrier creams, which have limited value and may even produce reactions in some skins. The moral there seems to be that you shouldn't start using them!*
However, silicone preparations with a high enough silicone level are valuable where solvent contact is unavoidable, but they are not suitable for much electronic work as the silicone and other constituents may contaminate the electrical components with consequent problems of conductivity.

I mentioned earlier the importance of the detection of new allergens in patch test studies. They may also be detected in experimental human and animal studies, but these are not without their disadvantages. A new technique has gradually developed over the last 20-30 years of anticipating allergenicity from the chemical and physical structure of a substance, so-called Structure Activity Relationships (SARs). We knew of this possibility for even longer; some of us considered an excess of aldehydes in a compound can sometimes produce allergenicity. However, procedures are now much more sophisticated and in this country the Unilever Group, headed by David Basketter, has been amongst the leaders.

Irritant and allergic dermatitis may be of three types: -
Firstly, **irritant dermatitis** is not associated with allergenicity and is due to the straightforward physical/chemical nature of a substance. It only occurs at the site of exposure. It will be produced in more people when exposure is greater. For example, very weak caustic soda contaminating the skin for a short time may produce no effect at all, but at higher levels or for longer periods will cause an irritant dermatitis in all

subjects. Lowering the level of exposure may be sufficient to prevent recurrence of the condition.

Secondly, **Allergic dermatitis** may be of two types: -

- The first is the common type, the scientific term being **Delayed Contact Dermatitis**. It usually occurs 1-3 days after exposure. It does not occur on first exposure, which is necessary to induce the allergic state, but subsequent exposure even at very low levels may produce reactions. It is a Type IV allergic reaction. There are no circulating antibodies and consequently it only occurs at points of contact.

- The second type of allergic dermatitis is the **Immediate** type, which occurs within minutes of exposure in the form of small blisters or bullae (like nettle rash). This is a Type 1 reaction and is associated with circulating antibodies so that the lesions may occur at **non-exposed** sites. The condition may also affect other systems than the skin producing anaphylactic reactions – swelling of the face, eyes and throat and difficulty in breathing. In some cases, death has occurred rapidly and it is essential to treat it as a medical emergency.

In addition to patch testing for Type IV dermatitis, prick testing of the skin for Type I is practicable but is not without its risks in view of the reactions mentioned and should only be undertaken where full medical resources for treatment of reactions are available. More recently, blood tests have become practicable, for example checking IgE antibodies, and similar studies may well take the place of prick testing, although they may be more time consuming and expensive.

The incidence of latex allergenicity has rapidly increased over the last 20-30 years; the first reported case was in 1979,although, cases did occur before that. Latex allergy is due to sensitisation to the proteins in rubber. The increase in incidence may be associated with a variety of factors including an appreciation of the need to avoid skin contact with body fluids of HIV and AIDS sufferers. The emergency services have to be supplied with gloves when handling victims where there is haemorrhage. Further causes are changes in the method of production of the rubber, both in the rubber plants and in the processing, where more efficient technical methods have been developed. The increased use by medical and nursing personnel plays an important part, although surgeons used rubber gloves for many years before 1979!

The exposure of the public to rubber is very extensive. In addition to medical applications it is also used for mattresses, dummies, balloons, raincoats, underwear, shoes, shower caps and many more. The delayed type of contact dermatitis is troublesome but not dangerous to life but the immediate type may result in dangerous anaphylactic reactions in a matter of minutes with obstruction to the respiratory tract, which may prove fatal. People with this are frequently found to suffer from atopy (dermatitis, asthma, hayfever). The danger is increased by the use of powder in gloves, which may convey the causative proteins to the respiratory system. Consequently, powder free gloves are often recommended with a realisation however that these are more expensive and alternative types of glove with no significant allergenicity should

always be considered. An excellent survey of latex allergy can be found on the HSE Website www.hse.gov.uk/latex. This is an excellent site of value to both specialist and the general public.

Few scientific papers seem complete without a reference to further work being desirable and with reference to the possibility of genes playing a part in the initiation and progress of the disease. The human genome project proceeds apace with enormous success. We may well soon be able to predict some of those who are more susceptible to allergic reactions and possibly to irritants than others. But this will present its own problems as to how they should or should not be restricted from some employment. We are already encountering this problem with other medical conditions. The hope is that genetic studies will also ultimately lead the way to prevention or cure.

Finally, although not generally considered contact dermatitis, it is important to keep in mind the effects of UVL for sunburn is an irritant dermatitis. The incidence of melanoma is increasing. The causes are not always fully understood, although it appears that some cases are associated with sunburn in earlier life. However others may occur without such a history.

Prevention is important. Sunburn should be avoided but mild tanning is less understood. The skin should not be exposed to strong sunlight, eg. during the height of the day. However, workmen in the construction industries may be reluctant to cover up adequately when undertaking heavy work at such times. It is an important problem, not only for the construction industry, but also for others exposed to such environmental conditions. In all cases, early diagnosis and treatment is vital if cure and even control is to be achieved. All cases of abnormal pigmentation, changes in moles or occurrence of new moles or similar lesions should be referred for medical advice at the first opportunity.

Hand Arm Vibration Syndrome update by Dr.Roger Cooke

Roger introduced his talk by saying that he would address the three areas of ***Knowledge of the Condition, Legislation and Common Law.*** HAV has three components – Vascular (VWF), Sensorineural (which may be more debilitating) and musculoskeletal.

The Vascular component can have a variety of names: -

- Vibration White Finger
- Occupational Reynaud's
- Spastic anaemia of the hands
- Dead or Waxy hands.

This photograph gives a good indication of well demarcated and proximal the symptoms are, so making them quite distinctive. The condition affects the system of arteries in the

hand, which can be tested to measure the circulation into and around the hand.

An attack of the symptoms (vasospasm) is characterised by episodes of well demarcated **blanching** or cyanosis of the digits. It is usually associated with numbness and hyperaemia when re-warming. These symptoms have to be interpreted carefully, however, as they are not always a definite indication of HAV. If they last for more than 1 or 2 hours after exposure stops, then it is probably not HAV. Any assessments have to be carefully selected, repeatable, Acceptable to those tested and cost effective. There are many tests described in HSG 88 Hand-Arm Vibration but there effectiveness is varied and there is an element of individuality in them. An objective test is one, which will **not** rely on a response from the patient, like the Nerve Conduction studies, Cold provocation tests, Doppler studies, Radiology and Arteriography. Examples of non-objective testing are Aesthesiometry, Vibrotactile thresholds, Thermal aesthesiometry and the Purdue pegboard test. Roger commented that results from the standardised tests are not specific to HAVS and need to be treated cautiously.

The severity of the symptoms is measured objectively against an internationally accepted system called the **Stockholm Vascular Scale:** -

- Stage 0 is the absence of blanching
- Stage 1V is occasional attacks affecting only the tips of one or more fingers
- Stage 2V is occasional attacks affecting distal, middle and rarely also proximal phalanges of one or more fingers
- Stage 3V is frequent attacks all phalanges of most fingers
- Stage 4V is as stage 3V, with trophic changes in the finger tips

The Health Surveillance covers five stages: -

1. Pre-employment assessment, before exposure begins, covering symptoms and medical history. If there are any symptoms, carry out a clinical assessment
2. Annual screening under the control of a responsible person, seeking simple facts about experience of blanching in the cold weather or tingling of the fingers.
3. Clinical Assessment, including compatibility with symptoms of HAVS, control by a Medical Practitioner, preferably one with training and experience in Occupational Medicine, use of an occupational nurse for routine surveillance testing and use of the HSE form **(see HSG88)**.
4. Formal diagnosis by a Registered medical practitioner for RIDDOR report and "fitness for work appraisals.
5. Optional standardised tests.

Regarding the issues at Common Law, Roger continued, liability is established if the employee can prove that the employer's action made a material contribution to the employee's loss. Furthermore, a duty of care only exists if the employer can reasonably foresee that his conduct will expose the claimant to the risk of personal injury. Any claim must be made within three years from the date the plaintiff discovered, or ought to have discovered the injury **(Limitation Act 1980)** but the court can extend this time in certain circumstances. The amount of liability may be limited by the extent of its contribution to the damage, whilst greater emphasis should be given to exposure after symptoms had begun, than to earlier exposure.

Decisions, however, don't always turn out as expected. Roger cited the case of Buxton v Montracon where, despite the fact that the medical experts for both plaintiff and defendant agreed that the symptoms could ***not*** be HAV, the judge decided *for* the plaintiff. In another case, Griggs v Transco, tests showed that the plaintiff did not have HAVS so, was it Hypothenar Hammer Syndrome or palmar arch disease. The judge decided on the balance of probabilities that the employer was still liable for something and awarded compensation, anyway!

The **Control of Vibration at work Regulations 2005** set the following values: -

- **Daily Exposure Action Value of 2.5 m/s^2**, above which employers must implement a programme of organisational and technical measures to reduce vibration to as low a level as is reasonably practicable and place employees under Health Surveillance.
- **Daily Exposure Limit Value of 5 m/s^2.** If this level is exceeded, the employer must take immediate action to reduce it, identify the cause and out in place control measures to ensure it isn't exceeded again.

To assist employers with their risk assessments, the HSE have placed an interactive, on-line **Hand-Arm Vibration Exposure Calculator** their webpage: -

http://www.hse.gov.uk/vibration

Roger said that the figures for the levels were derived from **BS6842, Guide to measurements and evaluation of human exposure to vibration transmitted to the hand** and commented that it was for vascular symptoms only. He went on to say that it was not a good predictor at low frequencies from sources like jackhammers or rammers. As the most injurious sources are low frequency, high amplitude types that seem to compromise the Values, somewhat!

Roger described a logical approach to managing vibration as: -

- Assess exposure carefully to eliminate/ reduce risk
- Record a detailed history and relevant examinations to get a clinical diagnosis
- Make an objective assessment of alternative causes.
- Remember, symptoms appearing > 2 years after exposure are not HAVS

Members' Questions

Francis Quinn of Birmingham City Council prefaced his question by commenting that Roger's talk had been the most interesting that he had heard on this subject. He than asked if HAVS was experienced on twin spindle buffing machines. Roger replied that operators were more likely to suffer from Carpal Tunnel Syndrome. He added it was important to interpret the significance of the acceleration figures related to HAVS correctly. Above **1m/s^2** there was some medical risk but above the Action Level of **2.8 m/s^2** the risk was much more pronounced, where 10% of persons exposed for 8 years could be expected to develop the disease. These figures were taken from BS 6842.

Dennis Walley of Homeserve plc asked what the RIDDOR requirements were, with regard to the various stages of the condition. Roger answered that the normal physiological response is not reportable. **(Secretary's Note: This is supported by the wording of RIDDOR Regulation 5, paras. 1(a) and 2(a), and the guidance in paragraphs 66 and 68. Reports also need to be verified against Schedule 3)**. Roger added that Common Law court decisions sometimes flew in the face of medical diagnoses when compensation was awarded, as in the case of Buxton-v-Montracon. In answer to a related question from Peter Evans, Roger explained that Montracon was a company, which made vehicle trailers.

Jim Hathaway of Beiersdorf UK enquired about the prognosis for recovery from exposure. Roger said that vascular symptoms might be presented in 10% of individuals. Recovery depended very much on individual physical characteristics and age at the onset of the exposure. Up to Stage 2V, recovery was possible over a period, if the exposure was stopped but above that level it was less certain.

Tom Maycock of Sandwell MBC asked how critical the 2.8 m/s^2 Exposure Action Level was. Roger repeated earlier remarks that it affected just the vascular symptoms and that only 10% of those exposed might be affected. The best protection was to adjust working methods and tools used to reduce both levels of vibration and the time of exposure in order to manage the risk.

Warwick closed the meeting at the end of questions and said that a vote of thanks had probably already been given by the first questioner, Francis Quinn but be nevertheless asked the members to show their appreciation in the normal way.