### LeClasp Workplace No Jewellery Program -Recommendation on the risk of wearing rings and wedding bands http://www.securiteconso.org/notice510.html?id\_article=510

THE CONSUMER SAFETY COMMISSION (15th December 2005)

HAVING REGARD TO the Consumer Code and specifically Articles L. 224-1, L. 224-4, R. 224 - 4 and R. 224-7 to R. 224-12

HAVING REGARD TO referral no. 05-005 initiated proprio motu

### WHEREAS:

### I. The Referral

In December 2004, French and foreign hand surgery specialists met in Paris for the Fortieth Congress of the Société Française de la chirurgie de la main (French society of hand surgery). They underscored that hand traumas (in 2002[1] an estimated 1,400,0000 per year, including 620,000 cases of severe trauma) now occur in daily life twice as often as they do at work. The physicians specifically warned the public of the potential hazard of wearing closed rings and wedding bands, which are major causes of irreversible hand trauma due to avulsion or tearing of the soft tissue and which cause the partial or total loss of a finger in half the cases.

When the Consumer Safety Commission was informed of the situation by an article published in *Le quotidien du médecin*, it decided to initiate a referral procedure *proprio motu* on the issue of the potential hazard of wearing rings and wedding bands, at its plenary session of 20 January 2005.

### II. Risk Analysis

### II.1. <u>Accidentology</u>

It is hard to know the number and causes of hand and wrist accidents occurring in France per year because there are numerous sources that sometimes provide very different data. The EPAC[2] system only records patients that have transited through general emergency departments or who have undergone minor surgery for benign injuries. Therefore, EPAC figures have to be completed with data from specialised networks. Actually, when a severe trauma occurs, the emergency services send the hand accident victims directly to the hand emergency centre closest to the place of accident (hand clinic, SOS mains [SOS hands]), which draw up their own statistics through the FESUM (European Federation of emergency services) network.

Thus, the EPAC system only lists 42 accidents caused by wearing rings and wedding bands from 1999 to 2003 (e.g., about 8 per year) whereas for FESUM wearing rings and wedding bands is the cause of about one amputation per day, viz., 350 accidents per year. According to this source, this practice accounts for 90% of finger avulsion cases that are treated in hospital departments and 13 to 15% of digit amputations per year.[3]

The figures concur with the numbers provided by specialists worldwide who since the first medical works on the subject (1952) have agreed on an average ratio of 300 cases per year for a population of 60 million[4] in industrialised countries.

On the other hand, most hand accidents now occur in the home [5] (62%, e.g. roughly 870,000) and account for 41% of reported daily life accidents, a rising trend with increased free time and leisure activities. On the other hand, thanks to progress in making machines safer and to numerous prevention campaigns, at the workplace the number of hand accidents has sharply dropped but has remained steady for several years (about 530,000 accidents per year). They are still the leading cause of industrial accidents (27%).

### II.2. Accident Circumstances and Victim Profiles

Today most industrial accidents occur while handling portable tools (73% of the cases) and mainly due to operator or third party (67%) not paying attention, and not due to any technical failures (2%). The accidents happen foremost to young men (average age, 31), recently hired staff or temps or poorly trained staff working at high-speed work rates.

In daily life, taking every accident cause or degree of severity into account, hand accident circumstances are extremely varied. Accidents due to wearing rings and wedding bands seldom occur in "high-risk" situations (handling tools or cutting machines, violent sports, and so on) but on the contrary during routine situations of home life (doing housework, closing a car door, falling in the street, getting caught on fencing, falling from a stool, and so on). There are twice as many male victims as female victims.



More than half of the benign accidents from 1999 and 2003 listed in the EPAC database[6] (including 25% of victims are young children) are the kind where "the ring gets stuck on the finger". They occur during game and leisure activities, one-third occur when ring gets snagged on a nail, fencing, doors and moving doors, and less than 2% during sports or DIY activities.



### II.3. The Clinical Consequences

Injuries to fingers caused by wearing rings and wedding bands (also called "ring fingers") are among the most severe hand accidents and are the hardest to treat. Actually, a finger sheared by a sharp object causes local vascular lesions that can be repaired by a mere suture; success rate is at roughly 70%. On the other hand, ring traction on a finger causes tissue avulsion. Nerves, vessels, tendons and the osteoarticular system do not have the same tear level, leading to partial or total "degloving" of the finger depending on what the ring is made of, how it fits the finger, the degree of violence and angle of the movement.



Two hand surgeons have specifically studied the phenomenon and attempted to measure the maximum resistance threshold of ring fingers. The analysis of their observations relies on a classification of injuries commonly used by specialists:[7]

- Class I: soft tissue wound; no rupture of vessels, nerves, tendons or joints
- Class II A: skin wound and bilateral rupture of vessels
- Class II B: soft tissue, vessel injury with partial rupture of nerves, tendons and joints
- Class III: complete degloving of soft tissue surrounding joints
- Class IV: complete ring avulsion

The first 1998 study conducted under Dr. David M. Kupfer, Department of Plastic and Orthopaedic Surgery, University of San Diego in California, [8] involved dropping a 30-pound weight attached to a ring bearing finger hanging from a hook, from a 9-inch height (see figure).

Results showed that in more than 90% of cases, the injuries caused by rings and wedding bands are Class II (29%) and Class IV (61%). On the tested sample (41 fingers), Class I injuries (10%) occurred at less than 80 N[9] and the first ring avulsions at 111 N. Maximum finger resistance is 346 N with average resistance at 154 N. Film records also show that the skin is the finger's strongest part. Once the skin tears, the remaining finger degloves or quickly avulses. Accordingly, although thin and narrow or tight rings are less resistant to traction and cause the skin to shear under traction, they are more dangerous than wide, thick rings.



The other 2000 study conducted by Dr. Thierry Dubert, a hand surgeon working with the Biomechanical Laboratory at the *Ecole nationale supérieure des arts et métiers de Paris* in 1999[10] produced comparable results[11] and analysed two types of traction, i.e.,

- Slow speed traction[12] - no injury occurred at under a traction of 260 N, 14% of (Class II and III) injuries occurred at

260 to 350 N and 86% of (Class IV) injuries happened at more powerful tractions. For Dr. Dubert, who was heard by the Commission, the threshold of test conditions may be raised to 500 N without any risk of serious injury to healthy fingers.

- Fast speed traction – when a weight attached to the ring is dropped from a 50-centimetre height, no injury occurs when weight is under 5 kilograms. However, at more than 10 kilograms, there is complete ring finger avulsion

Compared to these findings, the resistance of standard wedding bands (3-millimetre wide ring), regardless of alloy, is such that they will not open even when traction is 1,000 N.

The surgical replantation of a digit avulsion is only possible if the injured tissue is kept in the proper cold and hygiene conditions and if the patient's overall condition so allows. Except for the thumb, replantation surgery is not systematic. Actually, the technical difficulty is high because it requires long vascular bypasses from healthy zones and sometimes on vessels with a less than one-millimetre diameter.

There is a high risk of thrombosis and the survival rate of a replanted finger does not exceed 57%.[13]

A study presented at the December 2004 Hand Surgery Conference in Paris[14] reported on the follow-up of 33 patients that from 1989 to 2004 received care for "ring finger avulsion" that was caused by snagging the ring on a fixed object (fencing, door) in most cases. The table below summarizes the study findings.

Type of injury	Class I	Classes IIA & IIB	Class III	Class IV
Number	2	5	10	16
Percentage	6%	15%	30%	49%
Microsurgery operations	None	Unreleased	9 vascular repair operations	11 replantations
Success rate	NA	Unreleased	100%	45.5%
After-effects	85% hypersensitivity to cold – 49% mobility - PPD for 50% of the patients		100% hypersensitivity to cold – 50% of movement pain –81% recovered strength - 26% mobility - PPD for 100% of the patients	

Therefore, one-third of patients in the sample lost their finger for good; a successful replantation was performed on five patients, and 90% of the patients showed major functional after-effects. Actually when the tendons are injured or if the finger avulses at its base, it remains comparatively stiff after surgery also causing a loss of strength and mobility of the other fingers. That is why for manual workers specifically surgeons must sometimes arbitrate between aesthetic harm and functional capabilities. In this respect, the fingers do not all have the same functional value. The ring finger is considered as a "minor" finger that only serves to lock the grip. The index, middle finger and chiefly the thumb are essential. The loss of a thumb is an absolute indication for digit replantation even by using another finger or a toe (hetero-replantation).

It should be pointed out that hand injuries occurring during activities when victims do not have the impression of being at risk are psychologically traumatising especially since they leave extensive aesthetic damage aside from functional after-effects.

### III. The Ring and Wedding Band Market

In the jewellery industry, production and distribution conditions have radically changed over the past years, especially with the use of digital technologies, the growth of imports and retailing through franchise networks or super-stores. However, two markets can still be distinguished.

### III 1 Precious Jewellery & Haute Joaillerie

The first rings are said to have appeared during the Bronze Age. Early on, rings like circles were endowed with a symbolic meaning or a magical power. During Antiquity, depending on its value, a ring was a sign of social standing or group membership. During the Middle-Ages, it symbolised temporal or spiritual authority, bore coat of arms and became a seal. During the Renaissance, rings were enhanced and became finery; they were worn on several fingers, were bejewelled with stones and pearls, and were engraved.

Today, precious jewellery and haute joallerie encompass all the watches, jewellery and accessories made in precious metals guaranteed by a legal certificate (two-thirds gold, silver, platinum and gold plate), precious gems and pearls. Four million gold rings (23% of gold jewellery) are sold every year. They are valuable objects (average selling price is €299.00) and have kept a strong power symbolising commitment (engagement rings) or membership (coat of arms on signet rings) and are handed down from one generation to the next.

The wedding band has a special meaning. Worn on the fourth finger of the left hand, [15] it symbolises eternity, fidelity and the constant love of the couple whose commitment the ring embodies. Accordingly, the ring is made to be worn at all times [16] The custom became widespread during the Sixteenth Century. Nowadays, the ring models (after extreme simplification during the mid Nineteenth Century with the development of "plain bands" and "decorated bands" are again diversifying. Sales are also broken down between plain bands, two-gold and bejewelled bands. Ninety percent of the wedding bands are mass-produced and roughly 500,000 pieces are sold per year.

### 1112 Fashion Jewellery

The fashion jewellery market includes a range of products in different shapes and materials. Fashion rings accounting for a mere 10% of sales are in semi-precious metals, tin alloys, aluminium or brass. Jewellery in natural (wood, shell, leather, plant fibres, semiprecious stones) or synthetic (glass, paste, fabric, resins, nylon threads) can also be found

Aside from creative designers' work that may be quite expensive (€100.00 on average) and that are sold by professionals belonging to BOCI,[17] a substantial share of the output of often imported fashion jewellery (engraved silver rings, embossed signet rings, thumb rings and articulated rings) is marketed at inexpensive prices in independent boutiques or openair marketswhere they are available to young male and female customers.

For the BOCI representative, who was heard by the Commission, fashion rings are not as much of a hazard to consumers as precious jewellery rings and wedding bands. Indeed,

- Unlike gold jewellery, fashion jewellery seldom has any symbolic value. It is often purchased for oneself, often "on a whim", rather than bought as a gift. It is an outfit accessory that often follows fashion trends in terms of colours, shapes and materials and is not made to be worn all the time during routine activities or over a long period of time Basic ring materials are often tin alloys whose tensile strength is the lowest of all alloys used for jewellery (see Appendix no. 1§ II)

Because of economic profitability, most fashion rings are manufactured on a small scale, in a one-size-fits-all open ring that widens under violent traction and so do not present any great risk to wearer.

### III.3. Regulations and Standards

### III.3.1. The Manufacture of Rings and Wedding Bands

For the purpose of protecting the freedom of its creative designers, the profession has always been reluctant to adopt regulatory and normative documents framing jewellery manufacture. The extant regulations and standards mainly concern the quality of the marketed products and consumer protection against fraudulent transactions:

Decree no. 84-693 of 16 July 1984 on the guarantee certificate of the materials and pieces in platinum, gold or silver and the legislation on stamping and the authorities' control of the said obligations

The standard NF EN 28654 of August 1993, "colours of gold alloys - definition, colour range and designation" and all the standards on the precious metal content (gold, silver, platinum, palladium) of certain alloys used in jewellery.

 The standard NF EN 2865 of June 1993, "Jewellery – ring sizes – definition – measuring and designations"
Two texts specifically address the safety of jewellery pieces in terms of wearer's risk of allergy to certain component:.
The Order of 18 July 2000[18] that limits the use of nickel and its compounds in pieces of jewellery and clothing that are in direct contact with the skin, to prevent allergic reactions

The standard NF EN 1810 of October 1998 completing Directive 97/24/EC on the control of the nickel content in certain jewellery

For other risks and particularly the hazards incurred by the type of materials.[19] their tensile strength and shape, rings and wedding bands are directly ruled by General Product Safety Directive 2001/95/EC and Article L. 221-1 of the Consumer Code that instructs that, "Products and services must, under normal conditions of use or under other circumstances that may reasonably be foreseen by the professional, offer the safety that can legitimately be expected and must not be a danger to public health.

### III.3.2. Wearing Rings and Wedding Bands

The dangerousness of wearing rings and wedding bands in certain high risk situations is well identified and the competent authorities have taken several measures to ban wearing rings or to inform users. As for instance,

The Labour Code establishes the principle of employers implementing workplace accident prevention (article L. 230-1 and L. 230-

Under this framework, industrial facilities or vocational high schools have rules that forbid wearing rings and bands in workshops, laboratories or playgrounds.
In education, pursuant to the powers of organisation conferred by amended decrees no. 90-788 of 6 September 1990 and no. 85-924 of 30 August 1985[20] principals of local

In organised sports, certain federations expressly forbid their members from wearing jewellery, often in compliance with international regulations (French federation of basketball, football and judo), others are not as specific and forbid wearing any equipment that might injure the players (volleyball) or entrust the control of the measures to referees

and coaches (wrestling and rugby). However, others do not raise the issue at all as the practice of the sport per se seems incompatible with wearing any finger rings.

### IV. Making Rings and Wedding Bands Safe

### IV 1 Fashion Jewellery & Haute Joaillerie

After the BOCI representative presented the arguments on the safety of fashion rings and as no traction tests are available (except for gold jewellery), the case raporteur deemed it necessary to check the tensile strength of fashion rings in different shapes and materials and to run tests similar to those conducted by Dr. Kupfer and Dubert (see II-3). The tests were entrusted to the Laboratoire National de Métrologie et d'Essais (LNE, national metrology and test laboratory).

First, product purchase showed that although designer rings or leading brand-name rings are open most of the time because only very few are on the market, the same is not true for numerous other (brand name or other) models sold in shops, at open-air markets, in super-stores or on the Internet.

A dozen open and closed, models in various alloys, stone, Plexiglas, and wood, with and without stones were selected.

Slow traction tests of tensile strength (see appendix no. 2-I)



The purpose of the test was to measure ring fracture threshold by applying vertical traction at a speed of 5 millimetres per minute to the rings. As tensile strength depends on the geometry of the piece of jewellery, the tests were conducted along the axis of maximum ring strength, liable to cause the greatest damage to a finger. Maximum required force to fracture a band was recorded at a value of up to 999 N, a unit of force far exceeding digit resistance.

Three categories of rings were distinguished, e.g., open models that guarantee the band will open before finger vulnerability threshold is reached, models whose design includes one or two weak points (the insertion point of stones for bejewelled rings) or models in low strength materials (wood and resin), and closed rings that, regardless of alloy, have a very high fracture threshold.



Fast traction tests of tensile strength (see Appendix no. 2-II)

The purpose of the test was to identify the fracture threshold of rings by applying a vertical tensile strength. A 10-kilogram mass was dropped from a 50-centimeter height. The ring was tested along the axis of maximum strength identified during the earlier test.

For classification, the different models (except for the silver signet ring, no. 8) were found to be in the same dangerousness category as during slow speed tests. Open rings are still the safest. Rings with stones, in stone, wood or silver, break but the violence of shock and the fracture angle may cause damages that the test was unable to assess. Closed steel, gold plate and aluminium rings do not break when subjected to traction forces and, therefore, may cause serious finger injuries.

At fast speed, the alloy composition of the ring is a determining factor. Based on the hardness indexes provided by CETEHOR[21] (see Appendix no. 1-I), rings in Index 1 and 2 alloys (silver, tin, and so on) are well below the fracture threshold likely to cause body harm. However the steel and gold plate commonly used for fashion jewellery exceed the dangerousness threshold (Indexes 3 and 4).[22] However, results may change according to jewellery shape and finger fit.

In view of the tests, it appears that open rings and bands provide the highest level of safety whether traction speed is fast or slow. Setting stones or choosing lowstrength materials limit the risk of serious injuries. Aside from very few exceptions, closed bands, and especially those in high resistance alloys, aluminium or steel, are as dangerous as rings made in so-called precious alloys.

### IV.2. Hand Surgeons' Proposals

Hand surgeons are very aware of the risk. A number of them working with jewellery professionals have put forward several solutions to make closed rings and wedding bands safe. Some examples follow.

- In 1963, Dr. Bevin and Dr. Chase[23] suggested the complete incision of the ring. However the procedure irreversibly damages the piece and divests wedding bands of their symbolism.



- In 1969, Dr. Bianchi and in 1996, Dr. VARELA[24] suggested weakening the structure of the ring by making two partial incisions on its inner side. However, the procedure has never undergone any biomechanical tests.



- In 2000, Dr. Dubert working with the Biomechanical Laboratory at the *Ecole Nationale Supérieure des Arts et Métiers* tested two procedures to make rings safe, designed by a leading Parisian jeweller.

o An incision is made in the ring, a tiny part is hollowed out and then it is welded peripherally

o Ring coring, the cored out substance is replaced in the hollow, two or three points are laser welded and polished. Coring size depends on alloy, ring width and thickness so that ring fractures at traction of less than 350 N.

Once properly calibrated, only the second of the two procedures effectively guarantees that ring will open before reaching the serious injury threshold, every time.

Despite a ring-maker's attempt to market the procedure, the product was withdrawn from the market. Actually, for the procedure to be efficient, it supposes a coring calibration adjusted to each ring model (destructive tests paid for by manufacturer). Therefore, the procedure was only done for a few basic models, making its market promotion tricky compared to other sometimes more expensive but "unsafe" models. Furthermore, consumers specifically exposed to all sorts of shocks, pressures and vibrations had chosen this type of ring that, with use, sometimes did exactly what it was supposed to do, i.e., break under excessive force. Customers saw ring fragility as a defect and expected seller to repair the object, an onerous responsibility for retailers.

### IV.3. CETEHOR Recommendation

The watch-making technical centre, which was heard by the Commission, provided several technical details on the strength of the precious metals used to manufacture rings and wedding bands. The bands are made in alloys whose pure gold, silver or platinum content must comply with legal assays in France (750 thousandths for gold and 800 to 925 thousandths for silver). The choice and proportion of additional metals (copper, iridium, cobalt, ruthenium, and so on) required for good shock-resistance and tensile strength of the jewellery are linked to product aesthetics because the metals often determine colour and clarity. However, in all cases, their resistance exceeds finger resistance.

Mr. P., CETEHOR Technical Director, confirmed that in theory there are solutions to make rings and wedding bands safe without altering beauty and comfort, i.e.,

- Use an alloy with a high copper or tin content in part of the tube when casting the "tubes" used to manufacture wedding bands
- Saw the band or ring crosswise and then weld with soft metal; however, the aesthetic result is not always guaranteed

- Partially saw inner side of bands - Two cutting operations are needed to prevent the ring from separating and causing an injury (see Dr. Bianchi and Dr. Varela's proposal). This option is the most rational and easiest operation to carry out, even on wedding bands that have already been sold. It involves a case by case study of the thickness of the residual section that should be left, depending on ring shape and alloy

- Remove material, engravings on inner side of bands so as to lessen thickness invisibly

- Design closing and locking systems for open rings, components that would be an integral part decorating the work.

On the other hand, implementing the solutions on an industrial and commercial scale seems harder to do. In every case, the operations would raise the price of the jewellery and involve seriously addressing marketing issues so that retailers agree to sell the rings.

### V. High Risk Behaviour Prevention

Because of the variety of high-risk situations and the fact that hands are fairly well exposed to all sorts of accidents (burns, cuts, crushing, avulsion, and so on), hand accident prevention is an especially complex issue. Indeed, the few preventive actions that have been implemented focus but little on the potential danger of wearing rings and wedding bands.

The most explicit documents on the risk deal with industrial action. The *Institut National de Recherche et de Sécurité pour la prévention des accidents du travail et des maladies professionnelles* (French national institute competent in the area of occupational risk prevention protecting workers' health and safety and preventing occupational accidents or diseases) put out the poster shown on the right but it was not widely circulated.



In vocational education, accident prevention is part of the curricula for the CAP, BEP (different vocational and professional aptitude degrees) and vocational baccalaureates but there is no specific chapter on hand accidents and so obviously nothing on the potential hazard of wearing rings.

Unlike the workplace where the focus is on the individual approach targeting a particular organ ("protect your back, your ears"), national campaigns for the prevention of daily life accidents are usually deployed from the standpoint of the environment and public endangerment (risk of children getting burned, of the elderly falling) or from the standpoint of hazards (drowning, fire, mountain sports, sliding sports, and so on). As a result, none of them ever focus on the specific topic of hand protection.

On this issue, only spot actions involving local public and private partners addressed to consumers and businesses were rolled out in 2003, specifically by Association bourguignonne de la main (Burgundy hand association; see Appendix no. 3) and in 2004 by FESUM, [25] which published a informative brochure (see appendix no. 4) jointly with the Fédération française des sociétés d'assurance (French federation of insurance companies). The potential hazard of rings is addressed among other subjects. However, the focus is on dangerous activities and machines.

"DIY – get the information you need and read the instructions before using a tool that you are unfamiliar with. You can't learn how to become a plumber or a carpenter overnight. Don't wear wedding bands, rings, bracelets or watches. They work like traps when using ropes, rotating machines or drive-feed machines. A wedding band or a ring that gets snagged may rip off your finger! Cut the ring in two before it's too late!"

### ON THE BASIS OF THIS DATA,

Whereas accidents from wearing rings and bands, especially during daily life activities, are very serious;

Whereas succinct data on the number of hand accidents per year in France does not exist;

Whereas the activities during which this type of accident may occur, including activities that are not considered dangerous, are very diverse;

Whereas there is no difference in established dangerousness between precious jewellery and fashion jewellery if the pieces are closed metallic rings;

Whereas, although they need to be fine-tuned, techniques, which do not overmuch alter the beauty and symbolic meaning of some rings, are available that can make rings safe;

Whereas the prevention of risks inherent to wearing rings and wedding bands at the workplace, school and during the practice of sports and leisure activities needs to be strengthened;

Whereas consumers must be informed of the potential hazard of wearing rings and wedding bands during daily life activities;

### The Commission makes the following recommendations

### To the <u>public</u> authorities

Put together a succinct national collection of hand accidents listed by the different victim care facilities; the collection should be based on streamlined indicators so that different types of accidents and their circumstances can be quantified and qualified;
In education, recommend that school principals should:

o In primary and secondary schools and vocational establishments, include the banning of wearing finger jewellery during all school or school-related activities in the rules of their establishment;

o At all levels, build students' awareness of hand accident prevention and specifically the accidents from wearing rings and bands at the future workplace as well as during daily activities

### To sports federations and all the public and private stakeholders offering sports activities and organising sporting events

- Expressly forbid wearing rings and wedding bands when practising the sports activities that they are en charge of supervising and organising.

### **V** To the professionals in the precious jewellery and fashion jewellery industry

- Start thinking about how to integrate the prevention of risks inherent to wearing rings and wedding bands in the design and manufacture of their products, by drawing on the CETEHOR skills and expertise, among others;

- Inform consumers of the potential hazard of wearing finger jewellery and offer ring and wedding band wearers easy and fast services to make the rings safe as part of usual business operations, such as cutting, engraving, and so on, that are handled in the shop.

### To the manufacturers, retailers and renters of DIY, gardening and sports equipment

- Inform consumers of the potential hazard of wearing rings and wedding bands in their instructions or rental contracts, on posters or useful tips for consumers.

### **o** To the <u>public and private organisations</u> dedicated to accident prevention

### At the workplace:

- Sensitise entrepreneurs and employees, especially in the building, logistics and transportation industries of the potential hazard of wearing rings and wedding bands, not only when using fixed or portable machines generally considered as dangerous, but also during heavy object handling operations;

### During daily life:

- Study the possibility of integrating information on hand accidents and the risks inherent to wearing rings and weddings bands in the national campaign for the prevention of daily life accidents;

- In the long term, roll out a special, nationwide information and prevention campaign about hand accidents during daily life activities, with a focus on their traumatic nature, on injury-causing factors, specifically wearing rings and weddings bands, and on the range of situations where this type of accident may happen.

### ◊ To Consumers

- Remove any rings or wedding bands during activities where the risk of injury is especially high viz., DIY activities, gardening, handling heavy objects and individual or collective sports activities;

- Advise against wearing rings on the fingers that are critical for hand grip, e.g., thumb, index and middle finger;
- Regardless of the circumstances, forbid children and adolescents to wear closed rings and inform them of the potential danger;
- Have their rings and bands adjusted according the their changing morphology so the jewellery can be easily taken off if needed.

### ADOPTED AT THE SESSION HELD ON 15 DECEMBER 2005 ON THE BASIS OF THE REPORT BY MRS. LYDIA LE GALLO Assisted by Mrs. Muriel GRISOT, Commission Technical Advisors, in accordance with Article R.224-4 of the Consumer Code

### Appendix no. 1

### Hardness and durability of different alloys and metals (source CETEHOR)

### I- <u>Hardness</u>

Name of the alloy	Components	Hardness scale (from softest to hardest metal)
Gold	Or (75%) silver (12.5%) copper (12.5%)	Hardness can double depending on the proportions of gold and copper Index 2 to 3
White gold	Gold nickel palladium	Index 3
Sliver	Silver (925 mill.) copper (75 mill.)	Index 2
Platinum	Platinum (950 mill.) copper iridium, ruthenium or cobalt (50 mill.)	Index 3
Stainless steel	Iron chromium nickel molybdenum	Index 4
Tin	Tin lead bismuth	Index 1

### II - Strength

The fracture strength values of jewellery are variable depending on the state of the product (annealed or cold drawn)[26] and the type of alloy. The fracture strength values for different metals in their most tempered[27] state can be found in the table below. In some cases, metalwork may double the said values, which are expressed in MPa or N/mm<sup>2</sup>.[28]

Metal or alloy	Fracture strength value
Tin alloy	60
Gold	125
Platinum	135
Silver	150
Silver alloy	250
Zinc alloy	300
Platinum alloy	330
Gold alloy (750 mil.)	350
Stainless steel	500

### Appendix no. 2

Results of the low and fast speed traction tests of tensile strength

### I - Slow speed

Model no.	Type of ring	Material	Average tensile strength	Severity of the injuries (according to Dr. Kupfer and Dr. Dubert's research	
1	open ring	nickel-less alloy	21 N	Class I injuries at less than 80 N	
2	open ring	silver	52.5 N		
3	bejewelled ring	steel	147 N	Class I to III injuries - up to 351 N risk of severe impairment (class III and IV)	
4	squared closed ring	resin Plexiglas	153 N	are limited to 14% of the cases	
5	signet ring	Sumac wood	203 N		
б	closed ring	jade	624 N	Very high risk of Class IV injuries - with amputation or replantation (50% success rate)	
7	three-strand braided ring	aluminium	> 999 N		
8	signet ring	silver	> 999 N		
9	closed ring	gold-plate	> 999 N		
10	closed ring	steel	> 999 N		

### II - Fast speed

Model no.	Type of ring	Material	Average tensile strength	Types of injuries	
1	open ring	nickel-less alloy	maximum anerture	Class I or II benign injuries	
2	open ring	silver	maximum aperture		
8	signet ring	silver	fracture		
3	bejewelled ring	steel	fracture	Class I, II or III injuries depending on tensile strength threshold	
5	signet ring	Sumac wood	fracture		
б	closed ring	jade	fracture		
7	three-strand braided ring	aluminium	deformation	Risk of severe Class III or IV injuries	
9	closed ring	gold-plate	deformation		
10	closed ring	steel	deformation		

### Appendix no. 3

ABM Article

### **Associations**

56,000 Hand Accidents in Burgundy Every Year

### The Association bourguignonne de la main (the Burgundy hand association) Working to Build Consumers and Physicians' Awareness

Severed fingers or tendons, second-degree burns, joint destruction – Every year 56,000 hand accidents occur in Burgundy. "This is a high number," commented the Association bourguignonne de la main (ABM Main) during the launch of an awareness building campaign for consumers and general practitioners. Most accidents occur at the workplace. The Caisse régionale d'assurance maladie (regional health fund) reported 70 hand accidents for 1,000 employees in the Yonne département in 2001. This was the highest rate in all Burgundy (48.9 in Côte-d'Or, 49.1 in the Nièvre, and 52.6 in Saône-et-Loire). Initially established by medical professions in 2002, ABM Main received a 62,127-euro grant from the Union régionale d'assurance maladie (URCAM, regional health fund union) to produce 50,000 copies of a consumer information brochure and two thousand desk pads for physicians, and to open a website (www.abm-main.asso.fr)

### **Anticipate Dangerous Gestures**

"It's so obvious that our hands are precious that we don't pay attention to the dangers in many of our daily actions," commented the Association authorities. And the dangers abound. At home – not only for children – and at the workplace, despite the growing safety systems and measures in workshops. ABM's campaign wants to disseminate a reflex that would anticipate dangerous gestures. For instance, when at home, taking precautions when handling hot objects and when at work warning colleagues when a mechanic is working on a broken machine.

colleagues when a mechanic is working on a broken machine. Of course, today surgery can repair many severed fingers. But one should remember that this type of accident "may have serious consequences on our psyche viz., the loss of employment, a break-up, or depression," recalled the medical community.



# Workplace No Jewellery Program:

Today men and women are putting on more jewellery — from a traditional watch, bracelet(s), necklace(s) and rings; to trendy body piercings to beautify the nose, lip, belly button and other body parts.

Jewellery related accidents and injuries can happen when dangling neckwear, jewellery and similar items worn by workers

get caught in or get stuck against objects, equipment and moving parts of machinery.

Hand lacerations, sprained, crushed or broken fingers, arm fractures, ear scars from headgear, etc. are typical jewellery caused injuries.

**Our Solution** 

safety initiative --- equipping employees with a jewellery YHASE 1 - LeClasp Worker JEWELLERY Holde in the place of work etc. BEFORE walking bracelets, necklaces, can attach rings, earrings, holding device where they watches, body piercings, Handles the essentials of the

# **WASE 2 - LeClasp Medical Alert Id KEY Holde**

"non-dangling" substitute (backup, alternative) product that can SAFELY be carried & (bracelets, necklaces) with a Equips workers wearing Medical Alert Identification jewellery

- that can SAFELY be cannot that can SAFELY be cannot that KEPT ON THEIR PERSON at all times when working in the vicinity ltem#13505254. of heavy machinery, kitchens, Lečlasp.Medical Alert
- ¢ For proactive employers who take reasonable steps to prevent bodily harm to workers or visitors to facilities.
- ¢ Recommended across all kinds of industries and sub-sectors including industrial manufacturing and processing warehousing construction of and ges putp and paper mining agriculture, health and putp and paper, mining agriculture, health and education services, phermaeutical automotive utilities and electrical. Incode services, hospitally utilities and electrical transportation, public works, chemical, agriculture, transportation, public works, isheries, military, etc. (Hmmm. . Did we torgei

### Item # 1250 -LeClasp Worker JEWELLERY Holder Our patented LeClasp<sup>TM</sup> SAFETY JEWELLERY HOLDER can "clasp" up to 95% of all popular jewellery. A simple squeeze on possessions are kept safe, secure and protected – ready for the thumb pads and voila; a worker's irreplaceable personal safekeeping inside a locker, pocket or lunch box.

➡ LeClasp<sup>™</sup> can help raise awareness to the hazards of Benefits

LeClasp<sup>TM</sup> can help prevent jewellery related <u>contact with</u> objects, equipment and moving parts of machinery accidents jewellery and encourage safety habits at the workplace

 $\checkmark$  LeClasp<sup>TH</sup> can help protect "high risk" new hires, young Cost as low as \$6.80 per worker - Payback achieved on trainees & visitors to facilities from jewellery related injuries average after averting 2-3 jewellery related lost-time claims.

visit www.leclasp.com For additional information,

SYMBOL

SAFETY SAFETY SAFETY SAFETY FIRST FIRST FIRST FIRST REMOVE VISITOR STUDENT PATIENT Wellery Holder Lewelley Holder Lewelley Holder Workplace Jewellery Holders come decorated on the SAFETY SOLDIER Jewellery Holder SAFETY RECRUIT Jewellery Holder

FRONT side with the choice of six Safety First messages.

An ounce of prevention is worth a pound of cure

QUAGtum Inc. - Roberto Quagliotto - Corporate Account Manager - Ph. 888-679-4048 - robertoq@quagtum.com

# QUICKIE VIRTUAL PROPOSAL Norkplace No Jewellery Program

# LeClasp No Jewellery Program (Phase 1 and 2)

PHASE 1 - Handles the essentials of the safety initiative --- equipping employees with a jewellery holding device where they can attach rings, bracelets, necklaces, earrings, watches and piercings BEFORE walking in the place of work.



PHASE 2 -Equips workers who wear Medic Alert Identification (ID) jewellery with a "non-dangling" SUBSTITUTE that can be worn safely and kept on their person at all times in the workplace.

Item # 1350 - LeClasp KEY Holder comes identified on the front and back sides with worker emergency Medical Alert ID Information (50A - 50D)



Item #1352 - For more than two (2) conditions, allergies and prescribed meds, we recommend the LeClasp KEY Holder identified with a Generic "See Wallet Card" Symbol (59A) on the front side and, comes with a Free Emergency Contact and Medical Information Wallet Card that workers fill in themselves

ON COUMADIN

55D









## Ų 6 SFC DAVID ALAN MELANCON 3rd Brigade, 1st Cavalry Division Fort Hood, 1X



up in the hospital that January day. certainly wasn't expecting to wind an accident happened to me. I to perform a simple task when training exercise (FTX) and about was, just coming in from a field I'm a Bradley systems maintaine ave you ever noticed them? Well, there I when you least expect most accidents happen

wash rack, so we went to work. of the vehicles were staged at the vehicles. At about 1700, the last we had left to do was clean our field, but it was almost over—all tired after spending 3 weeks in the after that, possibly lraq. We were Joint Readiness Training Center and, preparation for a deployment to the We'd just completed the FTX in for a forward-support company. and maintenance platoon sergeant Everything about this day was

ring finger. I figured since our and slipped it back on my left-hand my wedding ring off my dog tags exception: that morning, I'd taken relatively normal, with one notable

> grabbed the right side rail for canvas covers on the trailer. shaped grooves used for securing my ring caught in one of the U-I moved toward the ground, and fall. My hand slid down the rail as lower bumper, and I began to foot slipped as I stepped on the on the trailer, got my things, and back of an LMTV trailer. I climbed gear, which was in a shelter on the only alive but with all 10 fingers! and thankfully I came home not home. That system worked well, and when my unit redeployed ring were when I left for R & R leave II, and the only times I put on my during Operation Iraqi Freedom in the field. I'd spent a year in Iraq duty, especially in the motor pool or around my dog tags when I'm on training was over, wearing my ring back down. Unfortunately, my balance as I prepared to climb because l always wear my ring was no big deal. I say this is notable I needed to get my wet-weather

pressure bandage, which I wrapped lifesaver bag and pulled out a bag—I've lost my finger!" out to the other guys and said, fingernail was missing. I called completely gone, and the bone pain. Another Soldier got a combat "Hey, get a medic, get the aid among other choice words, from the first joint just above my Needless to say, I was in a lot of

the tissue on my ring finger was

take off my helmet, weapon, and the roadway so I could sit down and and had a pickup truck brought off from main post, so the ambulance vest. We were only about 4 minutes The commanding officer dialed 911 around what was left of my finger. The doctors there told me

attempted repair would work. The extensive they didn't know if any the damage to my finger was so Army Community Hospital. to the emergency room at Darnell arrived fairly quickly and took me tissue, nerves, and vessels were

my finger would require 8 to 10 torn horizontally, and reattaching

> and vessel damage, even with surgery finger wouldn't have percent chance my there was only a 20hours of surgery the injury to zero. blood circulation in which reduced due to the nerve to be amputated of success. In fact, with no guarantee l faced a tough

and my finger was amputated performed surgery that night, permission to amputate. They because I would have a good had rested just that morning. the same place my wedding ring to the first joint—ironically, at with my wife, I gave the doctors decide, however, and after talking rehabilitation. They let me chance of full recovery after of action would be amputation doctors told me my best course decision. The

and tendons in my arm were explained some of the ligaments pain, not just in my hand but all which isn't good since I'm leftthe gripping power in my hand, rest of my life. I've lost about half I'll experience phantom pain the pulled during the accident, and the way up my arm. The doctors started rehab. I still feel a lot of since the accident, and I recently It's been about 2 months

## Giving the P

ing in a safe place—not on your hand—when you're on duty. gets caught on something, you risk either a degloving injury (i.e., all the kin peeled off) or total amputation. Both injuries hurt a lot, so keep your *wear* rings or other jewelry in a field or combat environment. If the ring ecovery, but notice the ring next to the injured finger. It's never safe to year of conflict. The injury itself isn't very remarkable and he made a ful This soldier injured his pinky finger while serving in Iraq during the first



with the 4th Infantry Division in Iraq. pecial thanks to LTC Roman Bilynsky, MD, who submitted this photo from his time

4 months of occupational therapy and prevent them from making I'll open another Soldier's eyes I should be back to normal. the doctors tell me that after about prognosis is pretty good, though; plus for a Soldier. My long-term shoot right-handed—a definite write and type again, but I can I share this story in the hope

> Stay alert and realize even the tired and wasn't thinking straight.

and lose my finger because I was unharmed only to come home happen. I survived a year in Iraq day. You never know what might on, no matter what's planned that

with us, we can do anything." my power to make sure I deploy predict I'll be able to deploy back to ring on my right hand from now "If he lost a finger and is still here Soldiers can look at me and say, think it'll be a morale booster if my because I know they need me. I with the Soldiers I've trained Believe me, I'll do everything in my career that winter afternoon. but I could just as easily have lost theater with my unit later this year, the same mistake. The doctors I'll be wearing my wedding

doctors, led by LTC John J. Faillace at

would like to thank his team of

Editor's note: SFC Melancon

me, it can happen to you too! in a big way. If it can happen to simplest of tasks can hurt you

for their outstanding care during Darnell Army Community Hospital,

it off whenever I put my uniform on, but I promise you this: I'll take

alan.melancon@us.army.mil.

Contact the author via e-mail at david. continued support. "FIRST TEAM!" 6th Squadron, 9th Cavalry for their thank the Soldiers, NCOs, and officers rehabilitation. He also would like to his hospitalization and subsequent

of Delta Company, 215th BSB and

handed. I'll have to learn how to

COUNTERMEASURE 04/06 https://crc.army.mil

Use Jewell



The choice is Yours

Finger or a Ring

my finger. The skin and most of

I was horrified as I looked at