



NO RISK



SWEDISH UNION OF CLERICAL AND TECHNICAL EMPLOYEES IN INDUSTRY
-for individual and industrial development-

NO RISK in the IT environment

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The IT society is creating new and serious risks to health

Completely new health problems have surfaced at our workplaces. Information Technology (IT) and the vast proliferation of electrical equipment that it has brought into our daily working life has created a new risk environment. Much of this has not been investigated, and the possible consequences to our health cannot be ignored. These invisible risks – often in the form of chemical efflux and physical radiation, under a common heading of ‘emissions’ – are at the centre of a project initiated by SIF – NO RISK in the IT environment*.

* The term “NOLL RISK” appearing in some of the illustrations is of course Swedish, and refers to the “NO RISK” concept, fully described in the text of this and other documents, that originated in Sweden.

THE NEWEST RISKS ARE USUALLY INVISIBLE

Invisible physical and chemical pollution, and a general lack of knowledge, mean that many people are probably risking their health at work without even being aware of it. Since we seldom know a lot ourselves about the sources of these risks, we don’t stand much chance of eliminating them, either.

This document is meant to focus attention on an important new problem in the work environment. Fear should be cured by knowledge, followed by measures put in place to reduce the risks as much as possible.

STRAIN INJURIES ARE INCREASING

Seventy per cent of all reported occupational injuries, including those in the IT world, are due to strain. Stress is one of the most important factors in this

connection. Many employees consider a high work tempo, allied to old-fashioned and outmoded organisation, to be a fundamental cause. Aching neck and shoulder muscles are common, as is tendonitis in the elbows or trapped nerves in the wrist. A major study by Arbetslivsinstitutet (The National Institute for Working Life) has shown that almost a million Swedes now suffer from so-called "mouse arm".

ALLERGIES HAVE BECOME ENDEMIC

People all over the world are worried about the effects of the apparently uncontrolled chemical pollution of the air, land and water. Without question, human health is being degraded by this. Fifty years ago allergies were unusual, but the number of those affected has dramatically increased. According to Folkhälsoinstitutet (The National Institute of Public Health), about 50% of the children in many Swedish urban areas suffer from allergies. Even if we don't know for certain what lies behind this increase, it is highly probable that environmental pollution, together with factors such as altered nutrition patterns, are important risk factors.

THE AIM OF THE NO RISK PROJECT

By means of its NO RISK project, SIF wants to make a contribution to the creation of IT workplaces and practices that are free from health risks. Achieving this goal requires increased attention to invisible and usually unknown risk environments. A factual debate concerning the problem is needed. It is also necessary for scientists to want to work in this, often very complex, substance area, so that health risks can be eliminated. A preliminary partial goal in the NO RISK project is therefore to build up an international knowledge network of researchers and experts, and to stimulate these in the development of new methods of risk assessment. This work can be supported by the immense amount of user experience embodied in such groups as SIF members. If manufacturers acquire more knowledge concerning the needs of users, and if the users' knowledge of technology increases, this will benefit those manufacturers who are prepared to invest in products that are adapted to suit both mankind and Nature. What is good for employees in general is also good for the environment, for industrial development and thereby beneficial to the whole of society.

1889

"No office or manual worker shall have to go to a workplace where their health is at risk"

**Legislation concerning protection against occupational hazards.
Swedish Statute Book 1889**

1998

"No-one shall need to risk his or her health as a result of deficiencies in the working environment or of hazardous working equipment"

**NO RISK
SIF
1998**

New technology provides new possibilities but also new problems

IT is a new work environment, which thus leads to new problems and new health risks.

"Sweden is probably the most computerised country in the world - despite its great advantages, the new technology has already created serious risks to health, both for people and the environment"

Quotation from a TCO folder concerning environmental labelling of computers

TCO, Tjänstemännens Centralorganisation - (The Swedish Confederation of Professional Employees)

Computers are necessary items in an efficient society. However, with its arrival, technology has set its own conditions. When designing the equipment and developing the new working procedures that accompany information technology, manufacturers have not sufficiently taken into account the risks to which users can be exposed.

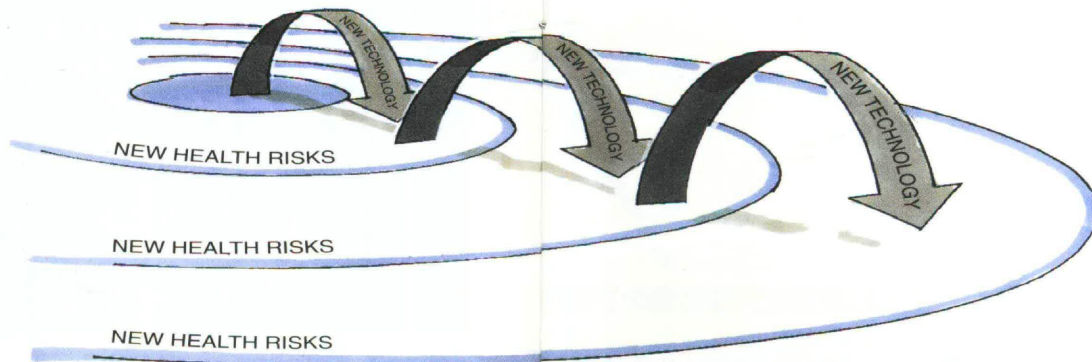
This year (1999), about a million new computer displays and computers will be sold. During its useful life, this equipment will affect at least as many users. Eventually all these computers will be scrapped, or to some extent recycled, depending on how environmentally-conscious the manufac-

turer has been. At the present time, electronics scrap is a considerable and important risk factor, that is very likely to have a negative effect on both humans and the external environment for a very long time to come.

Differences in opinion between scientists and experts whose work involves assessing environmentally-related health risks have created a climate of uncertainty among users, manufacturers and authorities. The greatest problem in this debate is the large measure of uncertainty that exists among the corpus of "expertise" within medicine, chemistry and physics concerning the degree of risk to health that can be related to the IT environment.

As an example, the problem of electrical hypersensitivity has split the experts into separate camps, where the arguments of one group do not appear to have any effect on the other.

International developments are now increasingly confirming the validity of the SIF approach, which is that the precautionary principle should be retained until more knowledge has been gained about the true risks attached to IT. More and more people are now expressing their great respect for the work that SIF has put into the question of electrical hypersensitivity. SIF is now going further, with the NO RISK project in the IT environment, which is thereby timely.



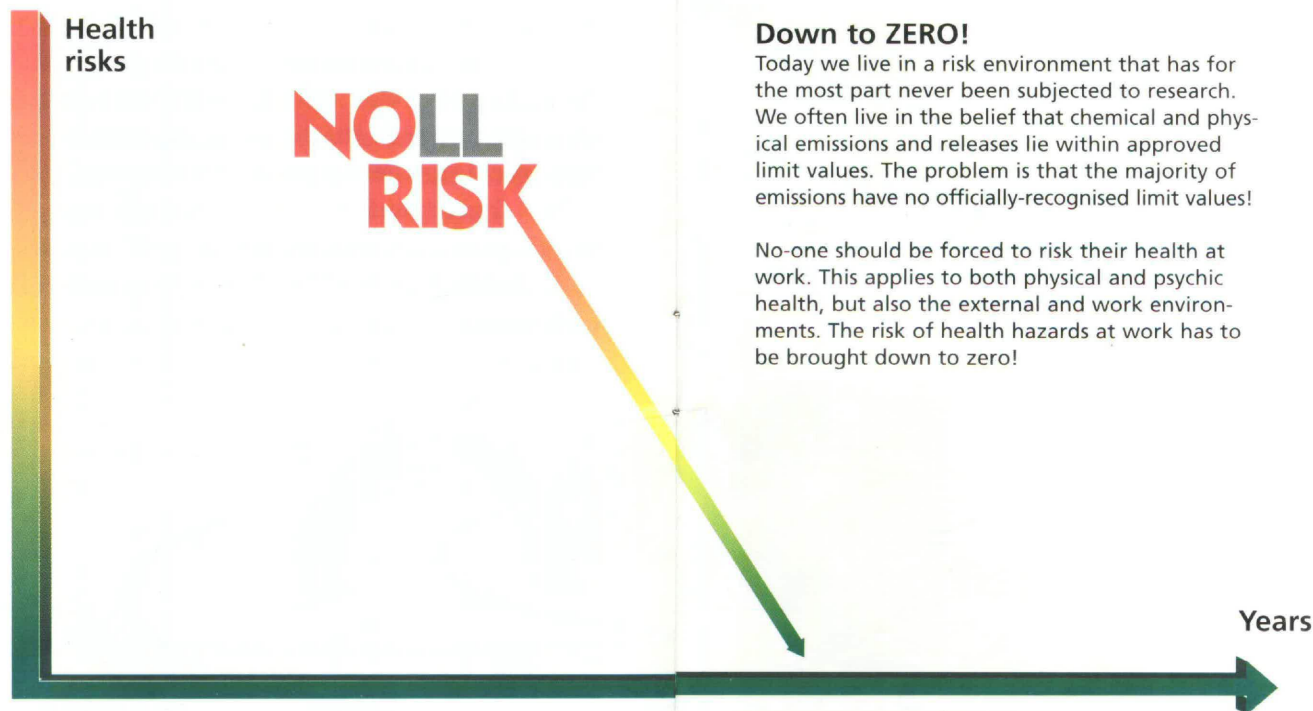
What does NO RISK mean in the IT environment?

The goal of NO RISK in the IT environment is to free our working environment from health risks - no risk to employees! It also stands for respect for the external environment. A healthy external environment is an important prerequisite for everyone's well-being.

The project also aims to increase users' knowledge, to provide support in the creation of risk-free workplaces, and to help to secure a choice of environmentally-adapted equipment. In addition, it wants to support the manufacturers of IT equip-

ment by co-ordinating such knowledge as currently exists, and initiating new knowledge to support the development of new and user-friendly technology, so-called Human Technology.

NO RISK in the IT environment concerns the work environment, but its consequences also include the external environment. It is no longer possible to separate the two, since what is bad for humans is naturally harmful to Nature, and vice versa. In Sweden, the Hallandsås environmental catastrophe has clearly proved this. Using the substance known as RochaGil without first carrying out a thorough risk analysis revealed disturbing deficiencies from both a work and natural environment point of view!



Down to ZERO!

Today we live in a risk environment that has for the most part never been subjected to research. We often live in the belief that chemical and physical emissions and releases lie within approved limit values. The problem is that the majority of emissions have no officially-recognised limit values!

No-one should be forced to risk their health at work. This applies to both physical and psychic health, but also the external and work environments. The risk of health hazards at work has to be brought down to zero!

Why is NO RISK needed in the IT environment?

The amount of electrical equipment in our workplaces has increased dramatically. We are usually surrounded by a "forest" of electrically-powered apparatus and lights, with the cabling underfoot often resembling a snake pit.

The concept of emissions is, in this context, very important. It stands for the release of tiny particles, the efflux of chemical substances into the air and the presence of electrical and magnetic fields surrounding electrically-powered equipment and electric cables.

Most of the emissions in today's work environment are invisible. They can consist, for example, of decomposition substances derived from plastic, such as flame retardants and solvents, or isocyanates that are released from computers or other electrical equipment, and which are absorbed by humans via airways and skin. They can also be electromagnetic fields that are feared to cause electrical hypersensitivity.

Another type of emission is the heat that all electrical equipment develops, and which in turn reduces air quality, thereby affecting our health. Tackling these known and suspected health risks is what the NO RISK project is designed to do in its first phase.



Radiating equipment!

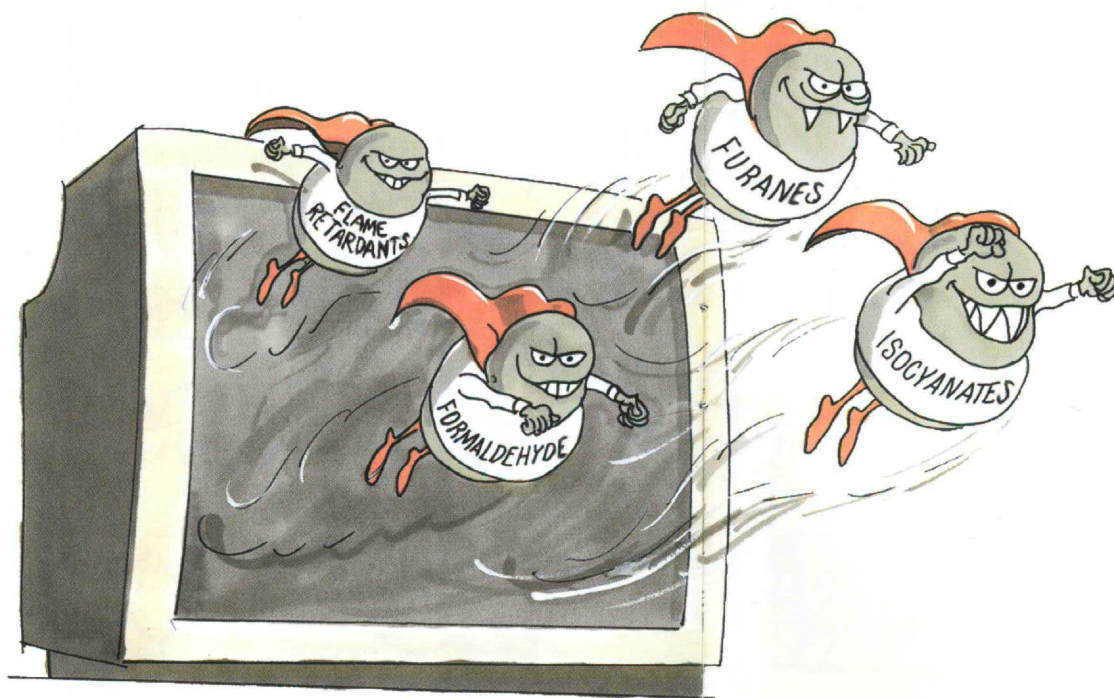
We are often surrounded by electrically-powered equipment which is producing a great deal of unnecessary radiation, e.g. electromagnetic fields, heat, chemicals, etc.

It's the invisible health risks that are causing problems nowadays!

How will the emissions that I am being exposed to today affect my health in a year's time – or five or ten years from now? This is to do with risks that most often can't be seen, and that we have precious little knowledge about. Few of us normal users have ever heard of chemicals with names such as isocyanates, furanes, formaldehyde or polybrominated diphenyl ethers, even though these are substances at present commonly found in our workplaces.

But even the experts don't know enough about how such chemicals can affect the human organism. The NO RISK project supports the accumulation of knowledge concerning the effects of these substances on Nature and on our health. SIF embraces the precautionary principle, whereby great care is taken when using products or substances if there is the slightest hint of a possible negative influence on humans and the environment.

The principle of "reversed proof" will undoubtedly be applied in the future to the use of new substances. This means that the manufacturers will have to prove that substances are not harmful before they can be used.



Free emissions

All sorts of chemicals are released into the air from the wide range of electrical equipment, such as computer displays, that we have in our offices. We know that some of these are harmful to health, whilst there are others we just don't know enough about. One thing we are sure of, however, is they have not been analysed sufficiently from the viewpoint of health, and are therefore undesirable!

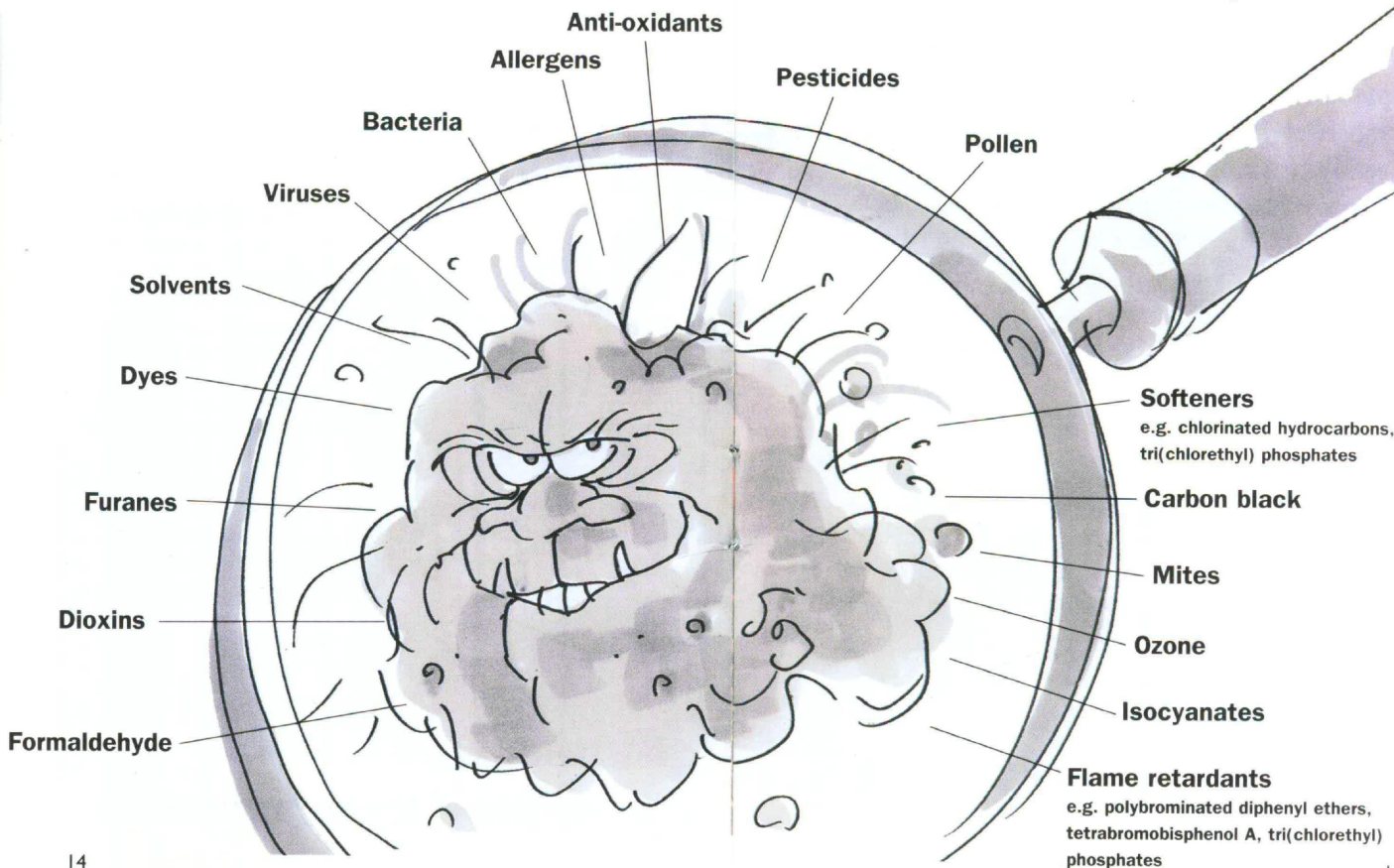
An electrostatically-charged speck of dust can contain all this

The amount of chemical substances being released from such electrical equipment as computer displays is rapidly increasing, and yet there is still insufficient knowledge concerning their effects. At the Karolinska Institute in Stockholm the levels of brominated flame retardants found in breast-feeding milk have been studied. (These substances are related to PCB, which is known to be harmful). Since 1972, when the levels were so

low that they could scarcely be measured, dramatic annual increases have been noted. People are absorbing these substances and particles partly through respiration and partly via food.

All the substances in the picture below have been found in the air we breathe. Our knowledge of their effects on the human body is quite limited, so we should try to minimise the use of these substances as far as possible.

It is difficult, and may even be impossible, to determine the limits of how much the body can tolerate before the effects pose a risk to health. We know that reactions within the body are highly individual. The entire range of these chemicals in the office environment should undoubtedly be restricted and minimised wherever possible.



Today's electrical power supply units generate high frequencies which increase the risks

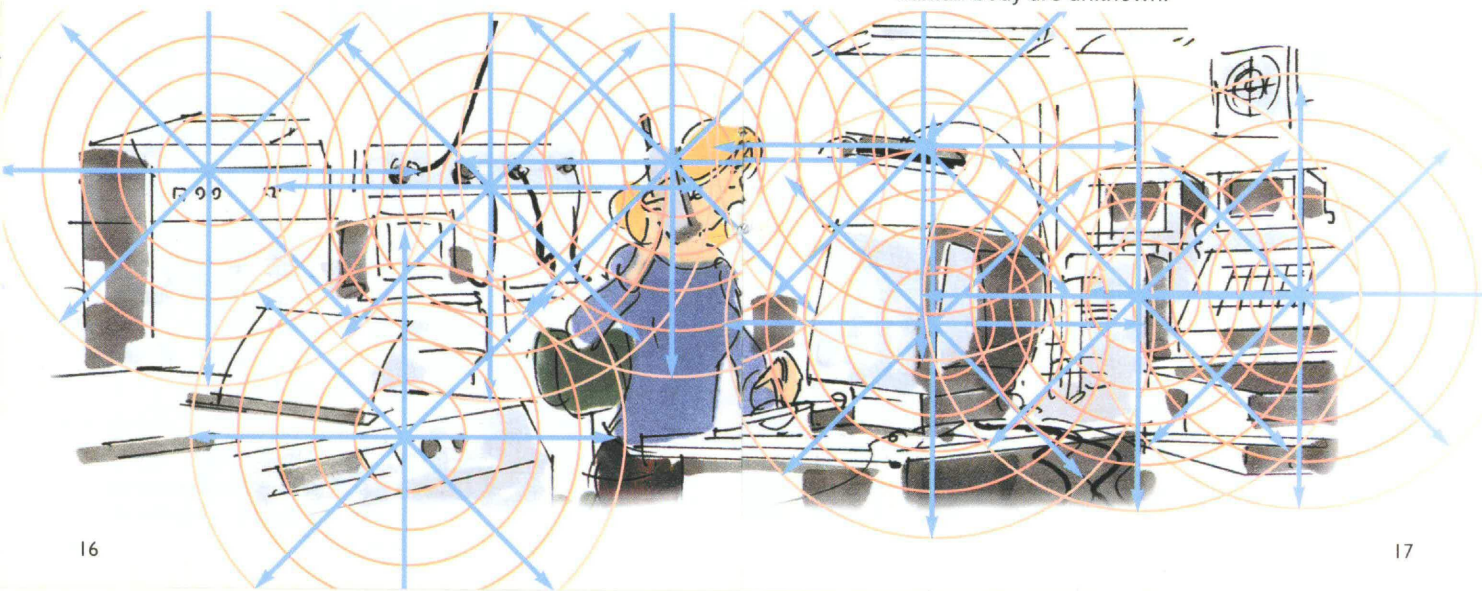
Never before in the whole of history has mankind been faced with so much exposure to electromagnetic fields as now. Today we are surrounded by electrical apparatus, all generating these fields. Sleeping next to a clock radio exposes you to just as powerful an electromagnetic field as if you were standing underneath a high tension power cable.

The electromagnetic fields generated by different devices affect each other, and their interaction can give rise to field modulations of a completely new character. The overall effects of these interacting electromagnetic disturbances have not been investigated scientifically, but some researchers think that unbalanced currents evoked in this way can have a very adverse effect

on the human organism, although others believe that the radiation is completely harmless. One thing is however certain – these electromagnetic fields affect us all, even if we don't yet know exactly how. The electromagnetic radiation that surrounds electrically-powered equipment is a polluting influence on the environment that is often completely unnecessary! In most cases it is possible to efficiently screen the equipment or move it to a separate room.

One problem that has newly been discovered is that some electrical components, such as transformers and voltage converters for certain types of lighting and other devices, distort and “chop up” the electric current they produce into short-period pulses, with harmonics at frequencies above the basic frequency of the mains power supply. These brief pulses are accused by many of being a major health risk, not least for people who are suffering already from electrical hypersensitivity.

The electromagnetic fields generated by the amount of electrical equipment present in today's offices interact with each other and often give rise to electrical disturbances, the effects of which on the human body are unknown.

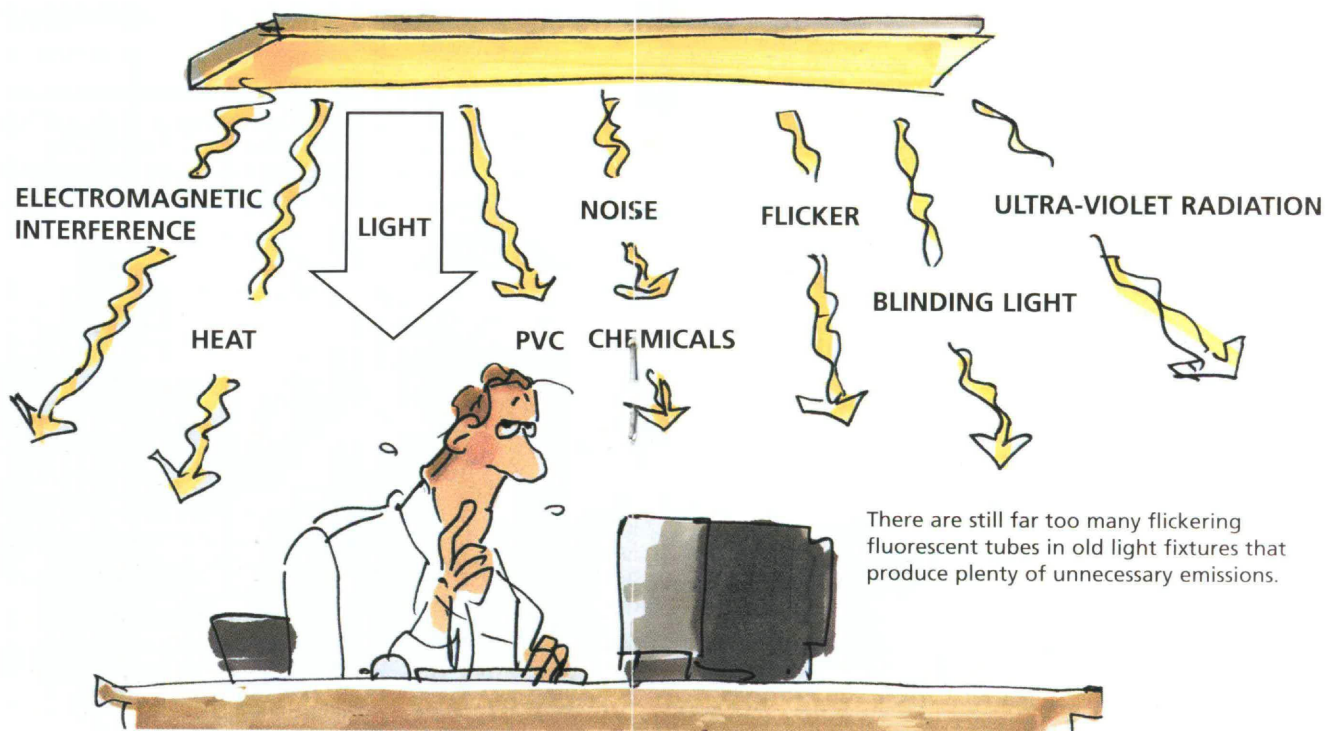


Our most commonly used strip lighting gives out large amounts of unnecessary emissions and radiation

The job of a lamp is to produce light - which is a kind of desirable emission. However, the fluorescent tubes and power-saving lamps we use today also produce a great deal of unnecessary emissions, with what we can call undesired side-effects. The technology of a fluorescent tube is old, but even if such lamps can be considered as energy-saving in comparison to the usual filament bulbs, a conventional fluorescent tube is actually

environmentally harmful. It contains mercury, and must therefore not be thrown in the dustbin, but instead handed in for correctly handled disposal. The picture below shows some examples of the side-effects from a perfectly ordinary fluorescent tube, that can pose hazards and are in the main completely unnecessary.

It used to be that environmental requirements imposed from outside, which meant changes in product design, were resisted by manufacturers on the grounds that it added cost and thereby lowered competitiveness. Now a new trend is beginning to appear. Product improvements based on concern for the environment are increasing their attractiveness on the market, at the same time giving savings to manufacturers and in fact increasing competitiveness.



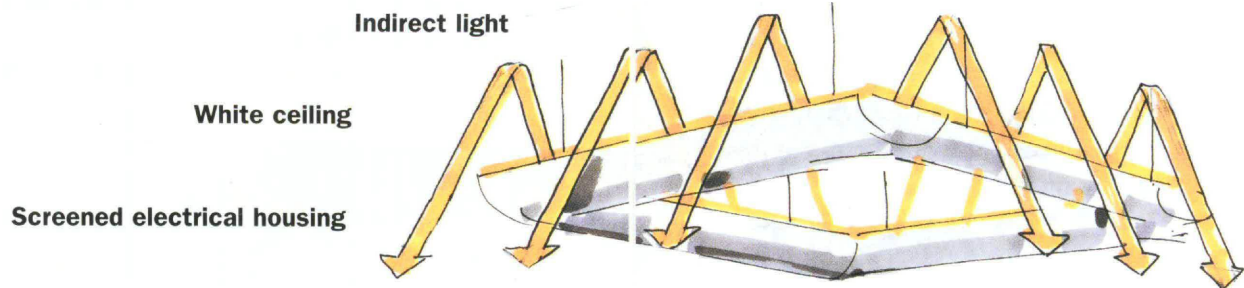
Good equipment is already on the way to presenting a NO RISK environment

The route to NO RISK in the IT environment does not necessarily have to be long and difficult. We already have a number of products that are well on the way to NO RISK. There are many lighting units that are flicker-free, and high frequency-

screened, which means that the tube itself is driven at a very high frequency, of about 30 000 Hz, instead of the more usual 50 Hz of the mains. This eliminates flicker without the tube heating up. It also comes on immediately when switched on, without flashing on and off first.

In most working conditions it is best for most of the light to be directed upwards so that it reflects off the ceiling. If necessary this can be complemented by single-point lighting aimed straight on to the working area.

Screened HF-type lighting fixture



New lighting technology has led to a great deal of improvement in respect of both general and single-point lighting. Flicker-free lamps with screened fixtures can provide an extremely good lighting environment.

Screened IT equipment



How dangerous are our mobile and cordless telephones?

The truth is that no-one knows exactly how dangerous the radiation from these telephones is. Australia has recently introduced limit values for mobile phones that are much stricter than their equivalents in Sweden. Does this mean that the Australians know more about the risks associated with mobile phones than we in Sweden do? No, the degree of knowledge is about the same, but they have a much higher level of risk consciousness, since they are more exposed to the effects of human activities on the environment. The connection between skin cancer (or malignant melanoma) and increased ultraviolet radiation (Australia has been hit hard by the ozone hole)

has led to increased watchfulness by the authorities. The debate on mobile phones has also raged more fiercely in Australia, where one body of opinion wants the precautionary principle to apply until more is known about the possible risks.

Radiation from mobile telephones also affects other electronic equipment, such as aircraft and hospitals; it can penetrate thick walls and into the human body.

There is now an increasing use in offices of internal telephony networks, using cordless DECT (Digital Enhanced Cordless Telephones), which as a rule are used more often and for longer conversations than mobile telephones. There is no knowledge about health risks from these, either.

The scientists cannot even agree. Those limit values that exist have been set only on the basis of the thermal effects (heat radiation). Insufficient investigation has been made into any health threats from non-thermal effects that may be present.



The DECT type of internal telephone system uses a network of radio base stations. Radio frequency fields are only generated when the telephone is in use. Unlike conventional mobile telephones, the DECT has no power control, and therefore these telephones always operate at maximum power. DECT systems also use higher frequencies than mobile phones. SIF recommends that everyone who uses DECT in their work should have hands-free equipment, so that they can use a separate earphone and microphone.

Stress often lies behind the most common reasons for sickness absence

About 70% of all occupational injuries are related to strain problems. This is a clear sign that the human body is often over-stretched, and one of the reasons for this is the stress imposed by working life.

What are the limits of our capabilities? We don't know. We think that we are the best judges of when we have reached our limits, but by that time it's usually too late.

Current research has discovered that stress weakens our immune system. Everybody knows what it's like to catch a cold just when stress is at its highest. The extent of this influence on the human immune system is not known, but many

Positive stress is a natural protective behaviour that sharpens our senses and reinforces our inner resources. It stimulates the body and prepares us to increase our capabilities – for a limited period.



sufferers of electrical hypersensitivity and allergies have been found to have reduced levels of immunity. The principle of “the straw that broke the camel's back” is quite likely to apply to many of the oversensitive reactions in our bodies.

More and more experts now define stress as the largest health problem of our time. “A time bomb”, say representatives of both the Health and Safety at Work and National Insurance organs. We already know that stress is a contributory factor to heart and coronary illnesses, high blood pressure, strain injuries and psycho-social problems.

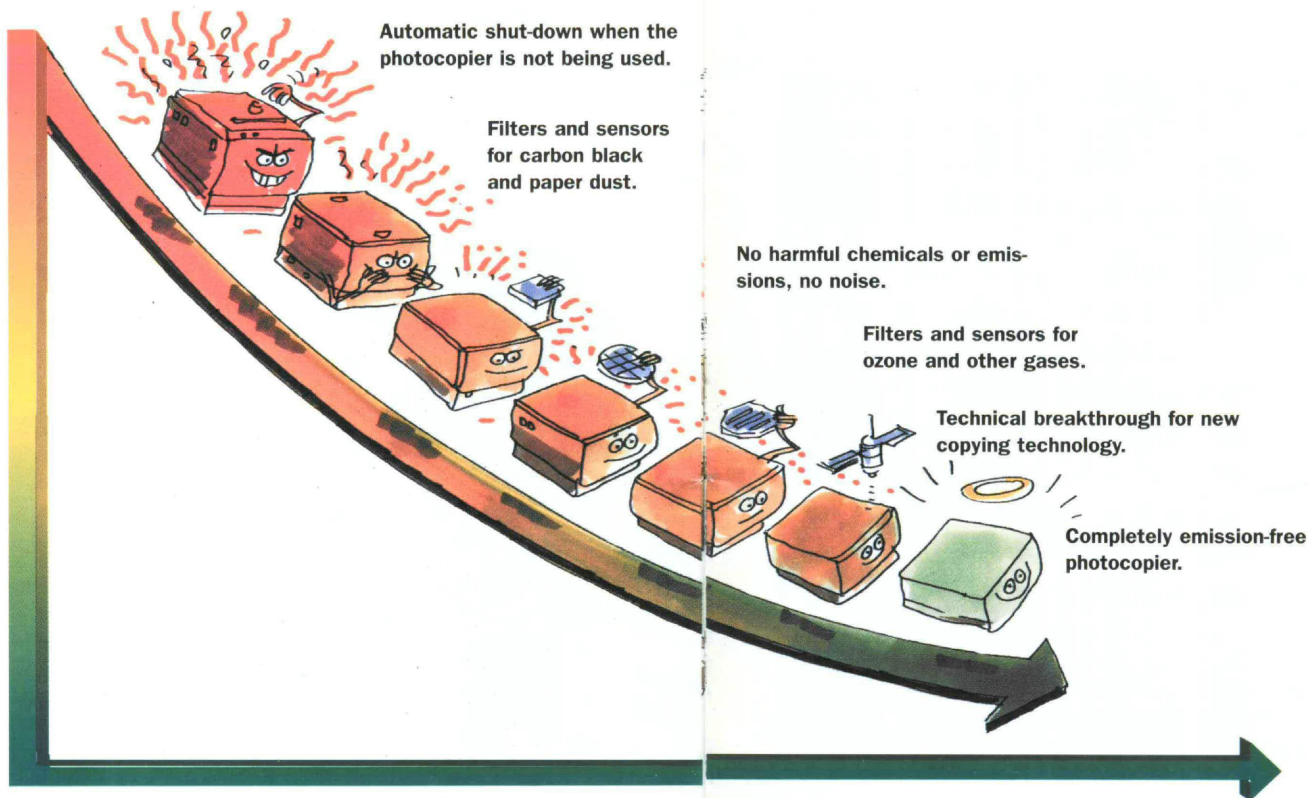
Stress is not just an automatic response to having a lot to do. Stress is built up of many factors, where inadequacy, lack of control of the work situation and deficient job satisfaction and enjoyment are important elements. In this way, even stress is but one example of the invisible health problems that often only become visible once the damage has already been done.

Negative stress is oppressive and destroys both job satisfaction and life's enjoyment. Stress really has little to do with how fast we have to work. Stress is brought about by what we don't manage to get done, all the things we ought to be doing, and it's our own bad consciences that are eating us away inside!

Is NO RISK possible or just plain ridiculous?

"You could never take all the risks out of the work environment – NO RISK is just not attainable", many probably think after looking at SIF's vision. But many experts said just the same thing about removing chlorine from paper manufacture, freon from refrigerators and the harmful solvents in paint, putty and glue – impossible! That was the accepted view. Today we know better.

It has to begin with customer demand, an opinion that has a direct effect on the market. Then an alternative appears. And alternatives do exist!



Laser printers are for example often equipped with ozone filters. Such filters need to be changed after just a couple of months use, but there is no requirement or even recommendation to do this.

There are already well-known techniques that can be used to eliminate a whole group of unnecessary emissions from printers and photocopiers, that include screens, sensors and filters. If we users get to know more about the subject we can also set demands when negotiating, and thereby apply pressure to bring about new and more user-adapted technology.

NO RISK has here one of its most important tasks, with the aid of knowledge accumulation and co-operation with scientists and manufacturers, helping users to set high environmental demands when purchasing new equipment.

High environmental demands favour exports

Demands concerning both the external and working environments stiffen competition and at the same time open new possibilities for companies to broaden their markets. Those who are investing in environmentally-adapted products right now have realised that it doesn't pay to "wait and see" if they want to take their place and compete for environmentally-conscious customers in the international marketplace. In societies that strive for long-term sustainable development it's only a matter of time before environmental demands exclude products that affect people and the environment in a negative sense.

Severe environmental demands give Swedish forestry companies a competitive advantage

"When our forestry industry embarked on environmental labelling, a lot of people complained of the risk of reduced profits. But when I met my European colleagues, many were very upset when they realised that it was such a great competitive advantage to the Swedish forestry industry that it would cause other countries problems."

Anna Lindh, Dagens Nyheter
(Swedish daily newspaper) May 11, 1998

Environmental demands are at present coming from two directions; from consumers, where a new sense of environmental awareness has grown up, and from companies who are demanding of their suppliers that they should have environmental management systems, and that their products must meet modern environmental and quality requirements.

Many companies are now changing their strategy. Instead of waiting for limit values or directives from the authorities, they are being proactive in meeting the increasing demand for environmentally-adapted products.

* The quotation below mentions brominated flame retardants (BFR), which consist of many different substances. Some are very dangerous to health and their use should therefore be forbidden immediately, while it is not clear yet how harmful others are.

The Swedish government is taking an important step towards the NO RISK project

"The Swedish government proposes that the entire group of chemicals that is suspected of damaging life shall be forbidden. As an example they name the brominated flame retardants that are used in furniture and computers."*

To wait until research has fully explored these substances might take a century. We can't wait that long."

Anna Lindh, Dagens Nyheter
(Swedish daily newspaper) May 11, 1998

It's a matter of prevention, prevention and even more prevention!

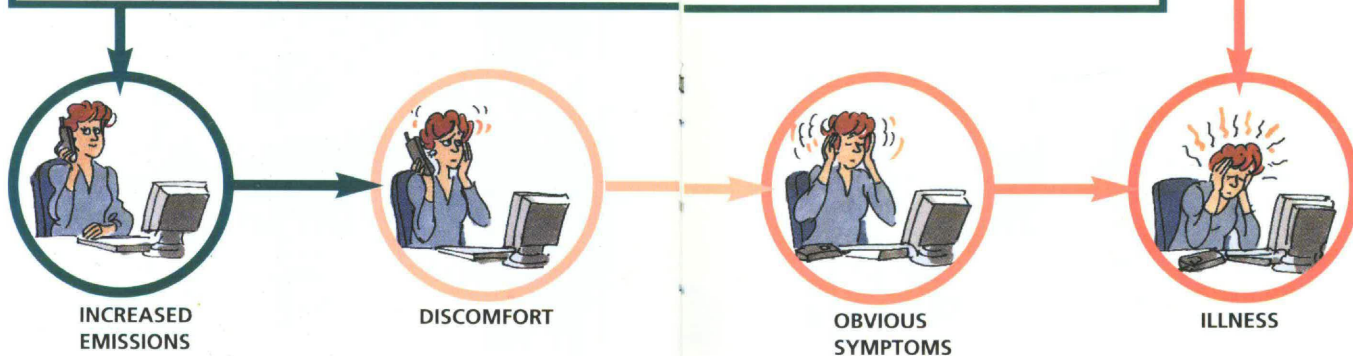
People who suffer from electrical hypersensitivity have, apart from the physical discomfort, almost always had also to put up with a distinct lack of sympathy and understanding from others. The difficulty this brings to recounting their problems causes many to keep quiet about the problem and try to suppress it. Once the damage has been done it is almost impossible to turn the clock back. The sensitivity increases, and regardless of

what changes may be made in the work environment, the problem tends to become chronic. Even if everything that can be done is done for those who are already suffering, preventive measures are the ones that can solve the problem. A lot of competence now exists in respect of planning electrically sanitised workplaces to radically minimise the risk of being afflicted. The same must be done in the case of ridding our workplaces of airborne risk-filled substances.

NO RISK in the work environment is best created by preventive measures based on true knowledge of the problems and an overview of people and the environment. Until this knowledge becomes available, the precautionary principle must apply.

At present we only try to solve problems **after** they have arisen
= a method for those who are already ill

With the NO RISK project, ill health shall **never be permitted to occur** = one method for all

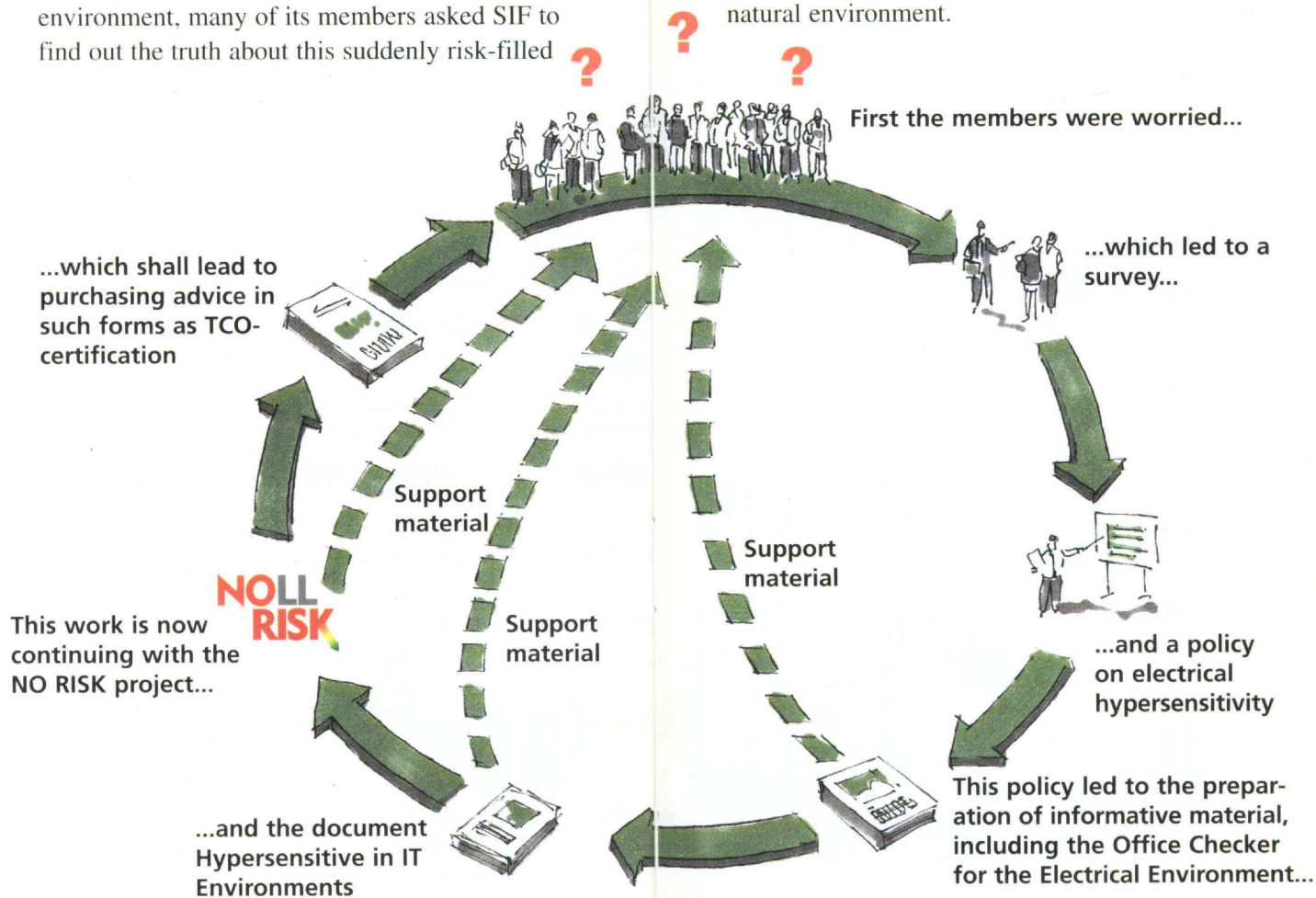


The needs of our members started the build-up of knowledge and gave birth to the idea of NO RISK in the IT environment

When the general public first became aware of the alarming reports that linked electrical hypersensitivity to electromagnetic fields in the IT environment, many of its members asked SIF to find out the truth about this suddenly risk-filled

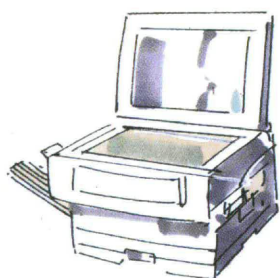
environment. SIF then carried out a survey among its members and initiated co-operation with experts to investigate whether the concern was justified. As the amount of knowledge in this area grew, the members were kept informed, and received support in avoiding the phenomenon of electrical hypersensitivity.

It is hoped that the NO RISK project shall lead to purchasing advice whereby SIF will be able to recommend suitable environmentally-labelled products, in turn leading to a reduction of the risk levels in the work environment and a simultaneous fall in the load imposed on the natural environment.

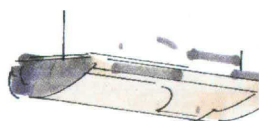


The NO RISK project paves the way to ensuring that obvious health risks shall not be present in the future office environment

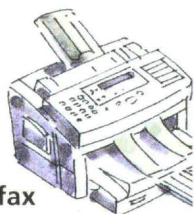
Continuous research and development is going on among office equipment manufacturers and within the IT industry, and this has already led to a long list of products that ease office work. However, as this brochure shows, new risk environments have been created. Hence it is necessary for the users'



Photocopier



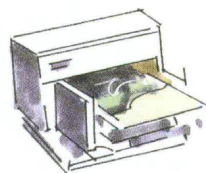
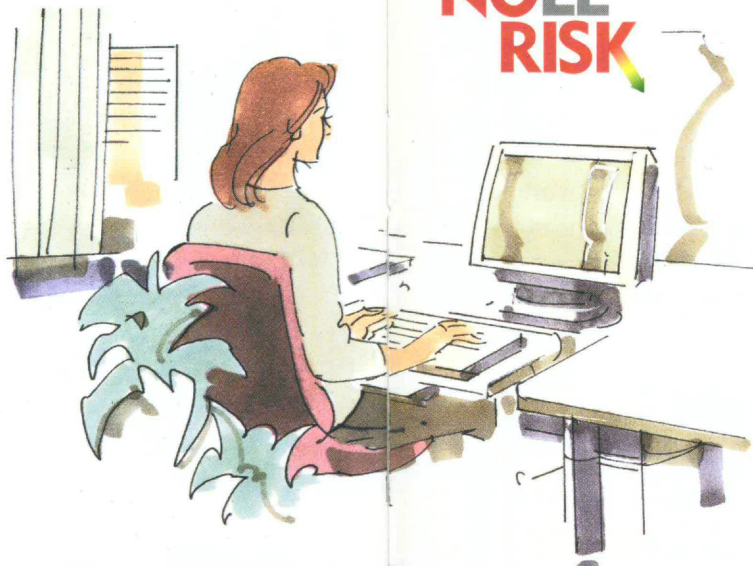
Lighting



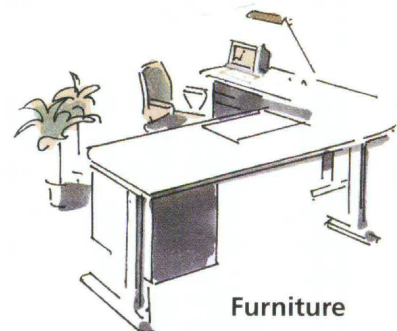
Telefax



Mobile telephone



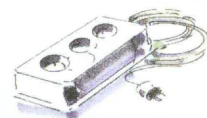
Printer



Furniture



Portable computer



Cabling and wiring

knowledge, real need for good equipment and demands for a risk-free work environment to reach the manufacturers. This influence would probably be most effective if industry could take into account the user expertise embodied in such groups as the SIF membership.

Users can also exercise their freedom of choice by only purchasing products that meet high level environmental requirements. Such "consumer power" has proved to be very effective within other product areas.

When the market offers NO RISK products SIF will have achieved its aim, to improve the work environment for employees, while reducing the burden upon Nature.

An important SIF initiative

We live in an age that challenges the capability of SIF to think in new ways within many areas.

Globalisation of the economy and rapid IT development have radically changed the conditions in which we work.

The NO RISK project devised by SIF for the IT environment is one example of new thinking, a completely new model for applying trade union influence to development by using the "consumer power" of the members. Only products and equipment that can meet tight environmental requirements shall be considered when negotiating, with a view to improving the working environment for the employees, while reducing Nature's burden.

This document has perhaps made you stop and think, in which case it has succeeded in its purpose. If, on the other hand, you feel worried, and perhaps powerless, the text has missed its mark. Worry doesn't solve anything, it's only through knowledge and practical measures that the working environment can be improved. If you would like to know more, please contact your local chapter.

Do you want to join in?

Do you want to join in and contribute your ideas and expertise to this project? Which new products and aids would you like to see in the workplace? Become a part of the SIF knowledge network! Let your local chapter know, or state your views and ventilate your opinions on the SIF home page at www.sif.se/cafesif (then choose SIF-miljö 99).



SWEDISH UNION OF CLERICAL AND TECHNICAL EMPLOYEES IN INDUSTRY

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