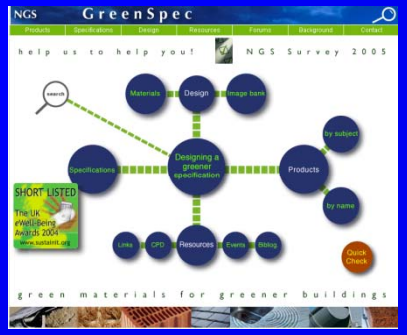

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Green is the Colour
The practical application of Sustainable Development

RIBA 14th April 1999

Regulations and Specification

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Part 1

- The increased requirements in Building, Health and Safety and other Regulations covering ‘Green’ materials and products in design.

Part 2

- Specifying environmentally friendly materials and methods

Part 1 Regulations and 'Green' materials

- You could be forgiven for thinking the title of the paper suggest that there is legislation out there encouraging the use of 'Green' materials
- I do not think this is quite the case
- but what there is is legislation that:
- controls, in some cases discourages and sometimes bans the use of
- shall we say 'Violet' material,

Part 1 Regulations and ‘Green’ materials

- As a consequence we are having to consider other materials
- which are ‘less Violet’
- and in some cases ‘Green’ materials.

‘Violet’ Materials

- ‘Violet’ chosen as it is at the opposite end of the spectrum from ‘Green’
- meaning: ‘any material that is unfriendly to humans or the environment or whose performance diminishes in use or over time’

Regulations V vested interest

- What we now need is Legislation that drives us towards ‘Green’ options
- rather than just more of the ‘Violet’ materials we use already
- I wonder if the next round of Building Regulations will help?
- will vested interest resist change or prevent it from happening.

Obstacles

- Regrettable there is also legislation out there
- and policemen that patrol its zone of influence,
- that will continue to maintain technical barriers (despite European Treaties)
- making their use less easy than their familiar but ‘Violet’ counterparts

Chronology of 'Green' agenda, legislation & awareness

- There are a number of different threads running through this chronology:
  - International Forum
  - Legislation
  - Product Quality
  - Guidance and Methods
  - Green Movements
  - Ethical Financial Activity

1961 Public Health Act

- Sets the way for a new system of National Regulations
- to replace Local By-laws

1965 Building Regulations

- Apparently a big change from what had gone before
- Much more stringent than Local By-laws and now nation-wide except London
- Introduced ‘Deemed to Satisfy Provisions’
- Set the standard for future legislation for the Construction Industry
- 7 amendments follow, up to 1971

1968 British Board of Agrément Established

- Offers manufacturers opportunity to have 3rd party independent assessment and test of products
- which do not meet 'Deemed to Satisfy provisions' of the Building Regulations, current British Standards or Code of Practice
- but achieve a useful purpose and need some form of verification.

1968 BBA Agrément Certificates

- They became a useful promotional aid and helps get Building Regulation approvals
- Equivalent bodies exist throughout Europe
- But there is reluctance to accept another country's Certificates

1970's First Oil Crisis

- The OPEC (Organisation of Petroleum Exporting Countries) predominantly Middle East countries, producing most of the worlds crude oil,
- create a cartel to fix the price of a barrel of oil significantly higher than previously
- USA, UK and many other countries who were reliant on outside sources for fuel suffered greatly at rising costs

1970's First Oil Crisis

- Although USA is a major producer of Crude oil it still purchases much of its oil elsewhere since it is a prolific consumer of fuel
- It became viable for the UK to extract North Sea Oil and Gas

1970's First Oil Crisis

- The Chinese centuries earlier invented the wok to reduce their demand for fuel since they had no natural resources of fuel and so little tree coverage to burn.
- Unlike in the West we use vast amounts of energy to heat water to heat food to then throw away the hot water and eat the food.

1970's First Oil Crisis

- Initially the Chinese suffered like everybody else, after a while they decided to become less dependant on fuel rather than pay the extra cost.
- They set about looking at every aspect of their lives and sought to improve their efficiency and to reduce their demands by asking the whole population and all the work forces to put suggestions forward.

1970's First Oil Crisis

- Unlike the West who would have taken the top ten ideas and implemented them
- the Chinese set about implementing them all
- pay back periods and unprofitable did not come into the question
- Australia Power Utilities insulated buildings for free so they would not have to build any more power station

1970's Second Oil Crisis

- When the second oil crisis occurred,
- this time generated by the OPEC counties being concerned about the way their resources were being squandered by the West
- the USA, UK and many other countries dependant on outside fuel sources
- stood back in horror, and paid even more for their crude oil.

1970's Second Oil Crisis

- The Chinese just stood back and said "Crisis, What crisis?".
- They were almost autonomous of the world oil market and probably will remain so despite a growing population
- OPEC's achieved their goal with the Chinese and Australia, not so the West
- Now the USA goes to War to defend its oil sources.

Comparative figures

- USA consumes 5 times the international average of energy per capita
- UK uses 2 times the international average of energy per capita

There is a lesson to be learned,

- We can all do our bit for the environment, no matter how small,
- Everything we do now will have a long term effect because its likely to be there for a long time.
- Lots of little interventions will lead to a great deal,
- the more you do, the more you might influence others around you.

We did not learn then

- For a decade or so Energy Consciousness was high on the agenda
- The AJ published extensively on the subject
- As a technician and student I read about it and saw it happening extensively in Europe but I never experienced it in the UK

We did not learn then

- Some practices set out to do something
- Some have specialised in it
- For many it was a fashion-thing
- Most never touched it
- Were they still reeling from the 1965 Building Regulations?
- If they were, their in for a shock in the future

Will we learn this time?

- I think we will
- because legislation will eventually force us to
- or we can take the initiative and address the issues ourselves now
- you are here today
- which is a step in the right direction

1972 Building Regulations

- Metric version of the Building Regulations
- brings together all the past 7 amendments and 1965 Regulations

1974 Health & Safety at Work Act

- designed to protect the employee from environmental hazards in the workplace
- This act continues to enable the enactment of European Directives.
- Examples:
  - VDT Operator Directive
  - Manual Handling Directive

1985 Building Regulations

- Radical new approach
- Minimal Regulations termed in Performance Requirements
- Introduces ‘Approved Documents’ replacing ‘Deemed to Satisfy Provisions’
- Part D deals with Toxic Substances
- Separate volumes will allow simplified amendment of parts

1985 Ionising Radiations Regulations

- imposes duties on employers to minimise the risk of exposure to Radon,
- a naturally occurring radio active gas,
- which can seep from rocky ground into buildings,
- protective measures are generally adopted in many developments where employees are not the only ones at risk.

1985 Ionising Radiations Regulations

- The use of aluminium in damp proof membranes is a solution
- BBA Agrément Certified products exist.
- depending upon the level of gas release, passive or active ventilation below the membrane to the building exterior is also in use.
- Wimlas Certified Products exist.

1987 Montreal Protocol

- an agreement on limiting use of Ozone Depleting Chemicals signed.
- Ozone O_3 helps to protect us from the UV in Sunlight
- ODC's are to be phased out
- Too little to late?
- too long to deadline

Ozone Depleting Chemicals

- Chlorine and Bromine are big problems
- CFCs, HCFCs and HFAs used as a blowing agent in foamed plastics contain chlorine.
- In insulation and joint filler boards and sealant backing rods
- and in refrigerant systems

Ozone Depleting Chemicals

- Blowing agents percolate out of the plastics and into the atmosphere
- diminishing the performance of the board
- Refrigerants may be released from systems
- They are then free to attack Ozone in the Earth's protection layer.

Ozone Depleting Chemicals

- We can do our bit not to specify not permit the use of CFCs and HCFCs
- HFAs (HydroFluoroAlkane) should also be avoided since they are a wider group containing HFCs and HCFCs
- be persistent with manufacturers to determine what their boards contain

Ozone Depleting Chemicals

- Halons (Halogenated Hydrocarbon) fire fighting agent
- contain Bromine have a very high ODP
- used in fire extinguishing systems
- These need to be phased out.

Catalysts

- Some act as catalysts (not part of the reaction but encourage others to react)
- so have a greater potential to destroy even more Ozone.

1987 Control of Asbestos at Work Regulations

- designed to prevent occupational exposure to asbestos,
- it was used in a variety of forms until 1980's
- but still persists in some applications where a suitable alternative is still sought.
- Many more Acts and Regs. follow

1989 BS 7541 General Criteria for suppliers' declaration of conformity

- Enable some control over what is actually delivered to site
- The Director of the manufacturer signs to say:
- it is what it claims to be
- and meets the specification.
- = EN 45014

1989 Amendments to Building Regulations

- SI 1989/1119
- A concerted effort to tackle energy issues amendments to Approved Documents:
- F Ventilation
- J Heat Producing Appliances
- L Conservation of fuel and power

1991 Building Regulations

- SI 1991/2768
- Acknowledges:
- CPD Construction Products Directive
- Construction Products Regulations
- Regulation 7 Materials and Workmanship
- ‘proper materials’

1991 Building Regulations

- Older parts still current
- Approved Documents:
- D Toxic Substances (1985)
- F Ventilation (1990)
- J Heat Producing Appliances (1990)
- L Conservation of fuel and power (1990)

1991 Construction Products Regulations

- In time for '1992' the beginning of the European Market.
- Implements the Construction Products Directive (89/106/EEC)
- Reinforced by Building Regulation 7
- and Scottish Technical Standards Regulation 11.

1991 Construction Products Regulations

- Essential Requirements
- EC Mark
- ETA European Technical Approvals
- National Agrément Certificates,
- BSI Kitemark

1991 BRE Launches BREEAM

- the 1st Method of assessing the environmental features of building and scoring them.
- Initially for New offices,
- subsequent issues over the following 4 years address similar issues on:
- Existing Offices, new supermarkets and Superstores, new Industrial Units, new Housing

1991 BREEAM

- Only a voluntary scheme
- Approx. 30% of office developments are adopting the assessment
- and use it as an aid to promote the buildings
- and achieving high occupancy rates

1992 Europe Arrives

- but status quo prevails
- You can carry on specifying by BS until EN's arrive to replace them
- Many European Directives follow
- which in turn will be implemented by Regulations or Acts in each member state.

1992 Technical Barriers

- You should no longer expect to see technical barriers placed by the Regulatory Policemen.
- You should not create your own Technical Barriers in excluding materials from Europe.

1993 Chemicals (Hazard Information and Packaging) Regulations (CHIP).

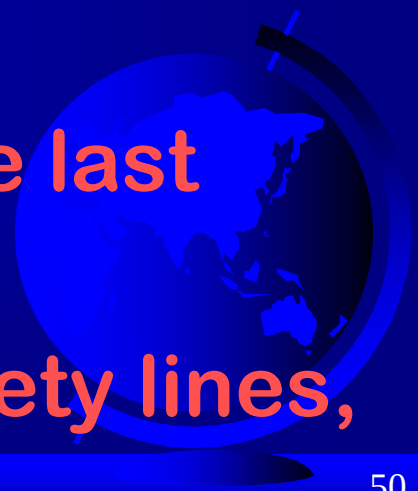
- Useful in CDM Risk assessments

1994 Amendment to Building Regulations

- SI 1994/1850
- Amendment to:
- L1 Conservation of Fuel
- Regulation 14
- Energy rating for new dwellings

1994 Construction (Design & Management) Regulations (CDM)

- Required consideration during the design stage and when choosing materials and methods of construction to avoid difficult or dangerous activities for building workforce and employees,
- Designs should now be safe,
- safety measures should be the last resort.
- E.g. Parapets on roofs not safety lines,



1994 CDM

- Requires risk assessments to be carried out throughout the whole procurement process including:
  - design,
  - manufacture,
  - construction,
  - maintenance, refurbishment, change of use
  - demolition
  - recycling

1994 Control of Substances Hazardous to Health (COSHH)

- Requires employers to identify hazards,
- carry our risk assessments,
- and provide the appropriate measures to reduce the risks to human health

1994 COSHH

- Designers now need to think harder about the materials we specify.
- Architect's responsibility to consider human friendly alternatives.
- We have stopped using Asbestos because of legislation,
- Ceramic Fibre products have all but disappeared from the market

1994 COSHH

- Manufacturer's required to release product data sheets
- describing the materials the ingredients,
- risks in their use,
- precautions to be adopted,
- safe methods of disposal etc.

1996 Construction Resources established

- sets out to research a Green approach, the availability of product which are:
- “high quality products that combine
- the highest possible levels of comfort and performance
- in the buildings that people live and work in
- with the lowest possible impact on the environment”.

1998 Euro-Agrément agreed by UEAtc

- This will allow any materials producer to seek an Agrément Certificate for their product in their own country
- At the same time have the product assessed for any other pre-agreed European state where it wishes to promote the product.

1998 Euro-Agrément

- The certificate will have:
- a front cover indicating the initiating and co-operating institutions
- an annex covering national provisions and regulated requirements

1998 Euro-Agrément

- Each pre-agreed state will take a minimalist approach
- and accept the overlapping areas already carried out by the initiating Institute
- It will be then be acceptable in those pre-agreed UEAtc member country
- as a pre-agreed confirmation.

1999 DETR Reviews the Building Regulations

- The need to improve energy efficiency and reduce greenhouse gas emissions, leads to a review of Part L
- CO_2 being a primary contributor from energy production.

1999 DETR Reviews the Building Regulations

- Possible outcome will be:
- substantial increasing fabric insulation standards
- new efficiency requirements of AC, ventilation and lighting systems
- requirement for airtightness testing & services commissioning

1999 DETR Reviews the Building Regulations

- Use of whole building CO_2 performance indices to show compliance
- embracing maintenance, repair and refurbishment into areas for consideration
- this might help to deal with existing housing stock

1999 Building Regulation 7

- 18 years after the 1981 government white paper on quality and competitiveness
- Revised guidance from DETR is issued to ensure ‘proper materials’ are used
- Even the building regulations policemen don’t seem to demand ‘quality products’

Part 1

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Part 2

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