



A New Approach to Skin Health Assessment

Helen Packham

EnviroDerm Services

2 Amery Lodge Farm, North Littleton,
Evesham, WR11 8QY, UK

E-mail: helen@enviroderm.co.uk

Introduction

- Prevention of occupational ill health due to dermal exposure
- Existing techniques detect clinical signs
- New techniques can detect sub-clinical damage

Cost of Compensation



Visual Assessment

- Visual and tactile examination of the skin
- Scoring system
- Comparison of images



Benefits and Disadvantages



- Quick
- Inexpensive
- Can be done 'on-site'
- Valid for all visible skin conditions



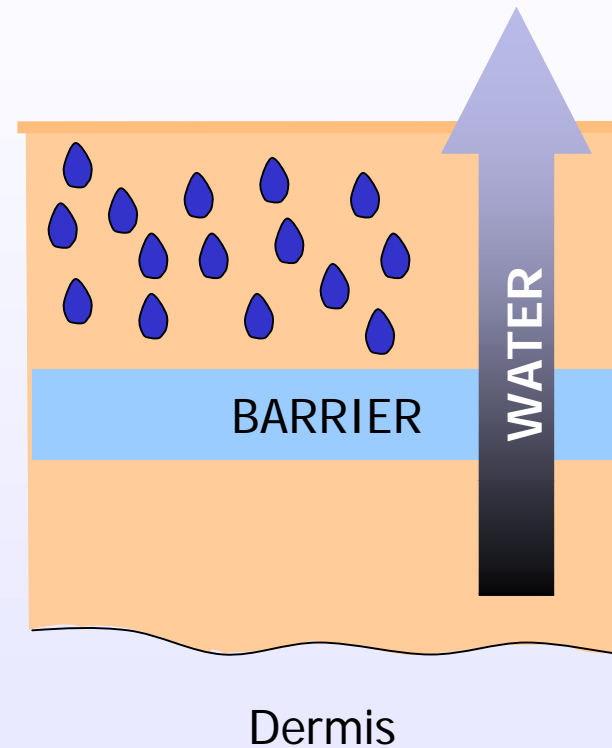
- Subjective, no quantitative data
- Requires experience/training
- May not indicate sub-clinical damage
- Surface conditions do not always correlate with conditions in the skin

New Techniques

- Skin Bioengineering – skin condition measurement
- Uses scientific equipment to measure skin parameters
- Parameters give us information about the condition of the skin

Important parameters

- Transepidermal Water Loss (TEWL)
- Skin Hydration
- Barrier function
- General skin condition



TEWL

- Below 20 g/m²/h
- Arbitrary Units
- Measure of Barrier Function
- Assess skin function

TEWL Measurement

- Open chamber
- Closed chamber
- Closed chamber with condenser
- Closed vented chamber

Skin Hydration

- Hydration of outer layers
- Lose ability to bind water
- Damaged skin has fall in hydration
- Assess general skin condition

Skin Hydration

- Capacitance
- Conductance
- Impedance

Benefits and Disadvantages



- Non-invasive
- Simple measurement methods
- Quantitative data
- May indicate sub-clinical damage
- Variety of parameters can be measured



- Only valid for certain skin conditions
- Requires controlled conditions

Using Measurements

- Individual needs to acclimatise
- Room conditions need to be
 - 40 – 60% Relative Humidity
 - 20 – 23°C

Using TEWL Measurements

- Measurement between 10 seconds and several minutes
- Value or unit
- Assess barrier damage
- Take action to prevent further damage
 - Before a visible problem
 - Reduce risk of chemical penetration

Using Hydration Measurements

- Measurement takes couple of seconds
- Arbitrary units
- Assess skin condition
- Take action to prevent further damage
 - Help prevent irritant contact dermatitis
 - Help prevent penetration by chemicals

Where to measure

On skin where there is potential
for a problem to occur

Interpretation: TEWL

- Low values = good barrier function
- High values = impaired barrier function

Interpretation: TEWL

Value g/m²/h	Unit	Interpretation
0-8	0-4	Very healthy barrier
8-14	5-9	Healthy barrier
14-20	10-12	Normal barrier
20-24	13-16	Strained barrier
25+	17-20	Indicates critical condition

Interpretation: Hydration

- Lower values = decline in skin condition
- Above certain level = normal skin condition

Interpretation: Hydration

Value	Interpretation
1	Skin condition very poor
2	Skin condition poor
3	Skin condition not good
4	Skin condition borderline
5-8	Skin condition normal
9-12	Skin abnormally moist

Benefits

- Quantitative data
 - Reports
 - Support need for action
 - Show compliance
- Sub-clinical damage
 - Action before clinical disease
- Easier to identify problems
- Raise worker awareness

Conclusions

- Simple to use techniques
- Quantitative data
- Sub-clinical damage
- Raise awareness

Exciting new approach to
skin health assessment

Thank you for listening!

Questions?