**Supplemental Materials**

*Lead compounds and search strategy*

Table S1. Inorganic Lead names and CAS identification numbers (CAS#s)

|  |  |
| --- | --- |
| **Name** | **CAS#** |
| Lead bromide | 10031-22-8 |
| Lead nitrate | 10099-74-8 |
| Lead monosilicate | 10099-76-0 |
| Lead vanadate(V) | 10099-79-3 |
| Lead iodide | 10101-63-0 |
| Lead molybdate(VI) | 10190-55-3 |
| Lead metaborate monohydrate | 10214-39-8 |
| Lead chlorate | 10294-47-0 |
| Lead hypophosphite | 10294-58-3 |
| Lead silicate | 11120-22-2 |
| Iron lead oxide (Fe12PbO19) | 12023-90-4 |
| Plumbate (PbO22-), sodium (1:2) | 12034-30-9 |
| Lead niobium oxide | 12034-88-7 |
| Lead tin oxide | 12036-31-6 |
| Lead oxide sulfate (Pb2O(SO4)) | 12036-76-9 |
| Bismuth lead | 12048-28-1 |
| Lead oxide (Pb2O) | 12059-89-1 |
| Lead titanium oxide | 12060-00-3 |
| Lead zirconium oxide | 12060-01-4 |
| Lead tantalum oxide | 12065-68-8 |
| Lead oxide sulfate (Pb5O4(SO4)) | 12065-90-6 |
| Lead selenide | 12069-00-0 |
| Lead disulphide | 12137-74-5 |
| Lead oxide phosphonate (Pb3O2(HPO3)) | 12141-20-7 |
| Lead chloride phosphate | 12157-93-6 |
| Lead oxide sulfate (Pb4O3(SO4)) | 12202-17-4 |
| Lead chloride oxide | 12205-72-0 |
| Lead hydroxide phosphate | 12207-55-5 |
| Antimony, compd. with lead (1:1) | 12266-38-5 |
| Lead hydroxide nitrate | 12268-84-7 |
| Lead germanate | 12435-47-1 |
| Hydroxylapatite, lead | 12530-18-6 |
| Lead titanate zirconate | 12626-81-2 |
| Lead silicate sulfate | 12687-78-4 |
| Lead-molybdenum chromate | 12709-98-7 |
| Lead tungsten oxide | 12737-98-3 |
| Lead oxide sulfate | 12765-51-4 |
| Lead dioxide | 1309-60-0 |
| Lead sesquioxide | 1314-27-8 |
| Lead tetroxide | 1314-41-6 |
| Lead sulfide | 1314-87-0 |
| Lead telluride | 1314-91-6 |
| Lead oxide | 1317-36-8 |
| Lead hydroxide carbonate | 1319-46-6 |
| Lead subacetate | 1335-32-6 |
| Lead azide | 13424-46-9 |
| Carbonic acid, lead salt | 13427-42-4 |
| Lead oxide phosphonate, hemihydrate | 1344-40-7 |
| Diphosphoric acid, lead(2+) salt (1:2) | 13453-66-2 |
| Lead tetrachloride | 13463-30-4 |
| Lead(II) thiosulfate | 13478-50-7 |
| Perchloric acid, lead(2+) salt (2:1) | 13637-76-8 |
| Lead disulphamidate | 13767-78-7 |
| Lead bromide chloride | 13778-36-4 |
| Lead iodide | 13779-98-1 |
| Lead fluoroborate | 13814-96-5 |
| Nitrous acid, lead(2+) salt (2:1) | 13826-65-8 |
| Lead(II) tellurate | 13845-35-7 |
| Lead, isotope of mass 206 | 13966-27-3 |
| Lead, ion (Pb2+) | 14280-50-3 |
| Lead ion (1 ) | 14701-27-0 |
| Lead metaborate | 14720-53-7 |
| Lead cation Pb4+ | 15158-12-0 |
| Sulfuric acid, lead salt (1:?) | 15739-80-7 |
| Chromic acid (H2CrO4), lead(2 ) salt | 15804-54-3 |
| Dibasic lead phosphate | 15845-52-0 |
| Telluric acid (H2TeO3), lead(2+) salt (1:1) | 15851-47-5 |
| Plumbane | 15875-18-0 |
| Lead chloride hydroxide | 15887-88-4 |
| Silicic acid (H4SiO4), lead salt (1:?) | 15906-71-5 |
| Phosphonic acid, lead salt (1:?) | 16038-76-9 |
| Lead phosphate | 16040-38-3 |
| Lead bromide hydroxide | 16651-91-5 |
| Lead chromate oxide | 18454-12-1 |
| Lead hydroxide | 19783-14-3 |
| Cyanamide, lead(2+) salt (1:1) | 20837-86-9 |
| Lead cyanamide | 20890-10-2 |
| Lead silicate | 22569-74-0 |
| Carbonic acid, lead(2+) salt (1:?) | 25510-11-6 |
| Iodic acid (HIO3), lead(2+) salt (2:1) | 25659-31-8 |
| Lead hexafluorosilicate | 25808-74-6 |
| Lead thiosulfate | 26265-65-6 |
| Lead acetate | 301-04-2 |
| Lead bromate | 34018-28-5 |
| Lead cyanamide | 35112-70-0 |
| Lead arsenate | 3687-31-8 |
| Lead sulfide | 39377-56-5 |
| Lead chloride silicate | 39390-00-6 |
| Lead chromate sulfate | 51899-02-6 |
| Sulfuric acid, lead salt, tetrabasic | 52732-72-6 |
| Lead fluoride | 53096-04-1 |
| Lead tetraacetate | 546-67-8 |
| Lead(II)cyanide | 592-05-2 |
| Lead thiocyanate | 592-87-0 |
| Lead carbonate | 598-63-0 |
| Lead acetate trihydrate | 6080-56-4 |
| Lead naphthenate | 61790-14-5 |
| Lead potassium thiocyanate | 63916-97-2 |
| Lead chloride oxide | 65722-61-4 |
| Lead silicate sulfate | 67711-86-8 |
| Silicic acid, lead nickel salt | 68130-19-8 |
| Hexanoic acid, dimethyl-, lead(2+) salt, basic | 68442-95-5 |
| Resin acids and Rosin acids, calcium lead salts | 68952-91-0 |
| Benzoic acid, 2,4-dihydroxy-, lead salt, basic | 68954-05-2 |
| Lead chromate silicate | 69011-07-0 |
| Lead powder | 7439-92-1 |
| Lead sulphite | 7446-10-8 |
| Lead sulfate | 7446-14-2 |
| Lead selenate | 7446-15-3 |
| Lead phosphate | 7446-27-7 |
| Lead selenite | 7488-51-9 |
| Lead chloride | 7758-95-4 |
| Lead chromate | 7758-97-6 |
| Lead tungstate | 7759-01-5 |
| Lead difluoride | 7783-46-2 |
| Lead tetrafluoride | 7783-59-777 |
| Lead formate | 811-54-1 |
| Lead uranate pigment | 85536-79-4 |
| Lead fluoride hydroxide | 97889-90-2 |

Table S2. Dermal exposure terms

|  |
| --- |
| "Skin"[MeSH] OR "Skin Irritancy Tests"[MeSH] OR "Skin Tests"[MeSH] OR "Skin Diseases"[MeSH] OR "Skin Physiological Phenomena"[MeSH] OR Acne\* OR Apocrine OR Argyria OR Atopic OR 'Blister\* OR Callosit\* OR Corrositex OR Cutaneous OR Cutis OR Cyst OR Cystic OR Cysts OR Dermal\* OR Dermatitis OR Dermato\* OR Dermis OR Eccrine OR Ectoderm\* OR Eczema\* OR Epicutaneous OR Epiderm\* OR Episkin OR Erythema\* OR Exanthema OR Exfoliat\* OR Fingernail\* OR Follicul\* OR Gangren\* OR Granuloma\* OR Hirsut\* OR Hyperhidrosis OR Hyperpigment\* OR Hypertricho\* OR Hypopigment\* OR Hypotricho\* OR Intertrigo OR Intradermal\* OR Irritat\* OR Jaundice OR Keloid\* OR Keratoacanthoma OR Keratoderma OR Keratosis OR Lichenoid OR Miliaria OR Mucocutaneous OR Neurodermat\* OR Onychomyco\* OR Pallor OR Panniculit\* OR Papulosquamous OR Paronychia OR Photosensitiv\* OR Porphyria\* OR Prurigo OR Prurit\* OR Psoriasis OR Purpura OR QSAR OR Radiodermatitis OR Rash\* OR Sebaceous OR Skin OR "Stratum Corneum" OR "Structure Activity Relationship" OR Sunburn OR Sweat OR Urticaria OR Vacciniforme OR Vesiculobullous OR Xeroderma OR transdermal\* OR epidermis[MESH] OR “epidermal layer” OR transdermal\* OR epidermis [MESH] OR epidermal layer |

*Calculations*

**Pb2+ acetate**

*Calculation from Moore et al. (1980)*

**Concentration of Pb applied:** 6 mM/liter of colloidal lotion, radiolabeled with Pb203 acetate (0.74mBq) (0.1 ml applied)

6mM Pb acetate= 1.95 mg/ml= 1.95 mg/cm3

**Surface area of skin treated:** 8 cm2

**Applied dose: (load):** 2.44x10-2 mg/ cm2

Application time: 12 hrs (0.5 days)

1.95 mg/ml \* 0.1ml= 0.195mg

0.195mg/8cm2= 2.44x10-2 mg/ cm2

Diffusion rate calculations:

Calculated Kp values from literature: 4x10-6 cm/h (EPA, 1992); 5x10-7 cm/h (Hostynek 2003)

Diffusion rate= 4x10-6 cm/h\* 1.95 mg/cm3= 8x10-6 mg/cm2/h

Diffusion rate= 5x10-7 cm/h\*1.95 mg/cm3= 1x10-6 mg/cm2/h

**Other results:**

The mean absorption (±standard deviation) in whole body count was 0.058±0.081%. The authors estimated that 0.355µg of a 612 µg Pb dose was absorbed during the experiment.

*Calculations from Pounds (1979)*

**Concentration of Pb applied:** 5mg in 500 µl solution (Grecian formula or distilled water or 70% ethanol)

**Surface area of skin treated:** 10 cm2

**Applied dose: (load):** 0.5 mg/cm2

**7 day**

Time weighted average diffusion rate calculations:

1.69% percutaneous absorption at 7 days (Grecian Formula)

5 mg\* 0.0169/7= 0.01 mg/day

0.012 mg/10cm2/day= 0.0012 mg/cm2/day

= 0.0012/24 hr= 5x10-5 mg/ cm2/h

1.51% percutaneous absorption at 7 days (ethanol)

5 mg\* 0.0151/7= 0.01mg/day

0.011 mg/10 cm2/day= 0.0011 mg/ cm2/day

= 0.0011/24 hr= 4 x10-5 mg/ cm2/h

2.99% percutaneous absorption at 7 days (distilled water)

5 mg\* 0.0299/7= 0.02mg/day

0.021 mg/10 cm2/day= 0.0021 mg/ cm2/day

= 0.0021/24 hr= 9x10-5 mg/ cm2/h

Kp calculations

Applied concentration 5mg/500µl= 0.01 mg/µl= 10 mg/ml= 10 mg/cm3

= 5.0x10-5 mg/cm /h / 10 mg/cm3= 5.0x10-6 cm2/h

= 4.5x10-5 mg/cm /h / 10 mg/cm3= 4.5x10-6 cm2/h

= 8.9x10-5 mg/cm /h / 10 mg/cm3= 8.9x10-6 cm2/h

Time weighted average diffusion rate calculations based on Hostynek et al. (1993)

Reported Flux (Hostynek et al. 1993) : 0.7 µg/cm2/day

0.7 µg /cm2/day/24hrs

= 0.029 µg/cm2/h

= 3x10-5 mg/cm2/h

Reported Flux (Hostynek et al. 1993): 1.4 µg /cm2/day

1.4 µg /cm2/day/ 24 hrs

=0.058 µg /cm2/h

=6x10-5mg/cm2/h

Calculated Kp values based on Hostynek et al. (1993)

Applied concentration 5mg/500µl= 0.01 mg/µl= 10 mg/ml= 10 mg/cm3

= 3x10-5 mg/ cm2/h / 10 mg/cm3= 3x10-6 cm/h

= 6x10-5mg/cm2/h/ 10mg/cm3= 6x10-6 cm/h

**14 day**

Time weighted average diffusion rate calculations:

2.75% percutaneous absorption at 14 days (Grecian formula)

5 mg\* 0.0275/14= 0.01 mg/day

0.01 mg/10cm2\*day= 0.001 mg/cm2/day

= 0.001/24 hr=4x10-5 mg/cm2/h

3.58% percutaneous absorption at 14 days (ethanol)

5 mg\* 0.0358/14= 0.013mg/day

0.013 mg/10cm2\*day= 0.0013 mg/cm2/day

= 0.0013/24 hr= 5x10-5 mg/ cm2/h

5.6% percutaneous absorption at 14 days

5 mg\* 0.056/14= 0.02mg/day

0.02 mg/10cm2\*day= 0.002 mg/cm2/day

= 0.002/24 hr= 8x10-5 mg/ cm2/h

Kp calculations

= 4x10-5 mg/cm /h / 10 mg/cm3= 4x10-6 cm/h

= 5x10-5 mg/cm /h / 10 mg/cm3= 5x10-6 cm/h

= 8x10-5 mg/cm /h / 10 mg/cm3=8x10-6 cm/h

**28 days (4 weeks)**

Dose= 5mg\*3 days/week\*4 weeks= 60 mg

Time weighted average diffusion rate calculations:

3.28% percutaneous absorption at 4 weeks

60mg\*0.0328/28= 0.0703

0.07/10cm2/day= 0.007 mg/cm2/day

= 0.007/24 hr=3X10-4 mg/ cm2/h

3.91% percutaneous absorption at 4 weeks

60mg\*0.039/28= 0.08

0.084/10cm2\*day= 0.0084 mg/cm2/day

= 0.0084/24 hr=3X10-4 mg/ cm2/h

3.58% percutaneous absorption at 4 weeks

60mg\*0.0358/28= 0.08

0.08/10cm2\*day= 0.008 mg/cm2/day

= 0.008/24 hr=3X10-4 mg/ cm2/h

Kp calculations

Applied concentration 5mg/500µl= 0.01 mg/µl= 10 mg/ml= 10 mg/cm3

3X10-4 mg/ cm2/h/ 10 mg/cm3= 3X10-5cm/h

3X10-4 mg/ cm2/h/ 10 mg/cm3= 3X10-5cm/h

3X10-4 mg/ cm2/h/ 10 mg/cm3= 3X10-5cm/h

Reported Flux (Hostynek et al. 1993): ~5 µg /cm2/day

5 µg /cm2/day/ 24 hrs

=0.21 µg /cm2/h

=2x10-4mg/cm2/h

Calculated Kp values based on Hostynek et al. (1993)

Applied concentration 5mg/500µl= 0.01 mg/µl= 10 mg/ml= 10 mg/cm3

= 2.1x10-4mg/cm2/h / 10 mg/cm3= 2.1x10-5 cm/h

**56 day (8 weeks)**

Dose= 5mg\*3 days/week\*4 weeks= 60 mg

(note: dosing stopped at 4 weeks)

Time weighted average diffusion rate calculations:

4.44% percutaneous absorption at 8 weeks

60mg\*0.044/56= 0.05

0.05/10cm2/day= 0.005 mg/cm2/day

= 0.005/24 hr=2X10-4 mg/ cm2/h

4.14% percutaneous absorption at 8 weeks

60mg\*0.0414/56= 0.044

0.044/10cm2\*day= 0.004 mg/cm2/day

= 0.004/24 hr=2X10-4 mg/cm2/h

4.27% percutaneous absorption at 8 weeks

60mg\*0.0427/56= 0.046

0.05/10cm2\*day= 0.005 mg/cm2/day

= 0.005/24 hr=2X10-4 mg/ cm2/h

Kp calculations

Applied concentration 5mg/500µl= 0.01 mg/µl= 10 mg/ml= 10 mg/cm3

2.0X10-4 mg/ cm2/h/ 10 mg/cm3= 2.0X10-5cm/h

1.7X10-4 mg/ cm2/h/ 10 mg/cm3= 1.7X10-5cm/h

1.9X10-4 mg/ cm2/h/ 10 mg/cm3= 1.9X10-5cm/h

*Calculations from Bress and Bidanset (1991)*

**Species:** human (skin)

**Surface area of skin treated:** 1.3cm2

**Dose of Pb applied:** 10 mg

**Applied dose: (load):** 7.7 mg/cm2

**Pb in receptor fluid**: 5 µg @37°C

Diffusion rate

Total Pb applied:

7.7 mg/cm2\*1.3 cm2= 10 mg= 10000ug

Receptor fluid fraction calculation:

5.0µg/10000µg= 0.0005

Avg diffusion rate calculation

(0.0005\*7.7 mg/cm2)/24 hr= 2x10-4mg/cm2/h

Note: Franken et al (2015) and Hostynek et al. (1993) calculated the same diffusion rate value

**Species:** guinea pig (skin)

**Surface area of skin treated:** 1.3cm2

**Dose of Pb applied:** 10 mg

**Applied dose: (load):** 7.7 mg/cm2

**Pb in receptor fluid**: 5 µg @37°C and 3 µg @23°C

Diffusion rate

Total Pb applied:

7.7 mg/cm2\*1.3 cm2= 10 mg= 10000ug

Receptor fluid fraction calculation:

3.0µg/10000µg= 0.0003 (@23°C)

5.0µg/10000µg= 0.0005 (@23°C)

Avg diffusion rate calculation

Skin at 37°C: (0.0003\*7.7 mg/cm2)/24 hr=

9.6x10-5 mg/cm2/h

Skin at 23°C: (0.0005\*7.7 mg/cm2)/24 hr=

1.6x10-4mg/cm2/h

Receptor fluid fraction calculation:

Skin at 37°C-3.0/10000= 0.0003

Skin at 23°C- 5.0/10000= 0.0005

*Calculations from Pan et al. (2010)*

**Concentration of Pb applied:** 120 mM Pb in 0.5 ml in double distilled water or synthetic sweat (39.03 mg/ml) (0.6 ml applied)

**Surface area of skin treated:** 0.785 cm2 diameter

**Applied dose: (load):** 24.86 mg/cm2

120mM Pb acetate= 39.03 mg/ml= 39.03 mg/cm3

Cumulative dose (receptor)

intact skin (Water)-0.23 ug/cm2

SC stripped skin (water)- 0.40 ug/cm2

Intact skin (syn sweat)- 0.13 ug/cm2

39.03 mg/ml \* 0.5ml= 19.52 mg.

19.52mg/0.785 cm2= 24.86 mg/cm2= 24860 ug/cm2

Receptor fluid fraction calculation:

Intact skin (water): (0.23ug/cm2)/(24860ug/cm2)= 9.25x10-6

SC stripped skin (water): (0.4 ug/cm2)/(24860ug/cm2)= 1.6x10-5

Intact skin (syn sweat): (0.13 ug/cm2)/(24860 ug/cm2)= 5.2x10-6

Avg diffusion rate calculation

Intact skin (water): (9.25x10-6\*24.86 mg/cm2)/10 hr= 2.3x10-5 mg/cm2/h

SC stripped skin (water): (1.6x10-5\*24.86 mg/cm2)/10 hr= 4.0x10-5 mg/cm2/h

Intact skin (syn sweat): (5.2x10-6\*24.86 mg/cm2)/10 hr= 1.3x10-5 mg/cm2/h

Kp calculations

Intact skin (water): 2.3x10-5 mg/cm2/h/39.03 mg/ml= 5.9x10-7 cm/h

SC stripped skin (water): 4.0x10-5 mg/cm2/h/ 39.03 mg/ml= 1.0x10-6 cm/h

Intact skin (syn sweat): 1.3x10-5 mg/cm2/h/ 39.03 mg/ml= 3.3x10-7 cm/h

Cumulative dose (skin)

Intact skin (Water)- 11.1 ug/mg

SC Stripped skin- 28 ug/mg (approx.)

Syn sweat – 2ug/mg (approx.)

**Pb oxide and Pb metal studies**

*Calculations from Filon et al. (2006)*

**Concentration of Pb applied:** The dosing was reported as 10mg of total Pb. No information was provided on how the Pb was dosed on the skin.

**Applied dose: (load):** 5mg/cm2

**Surface area of skin treated:** 3.14 cm2

Receptor fluid fraction calculation:

(0.0000029 mg /cm2)/(5 mg/cm2)= 5.8x10-7

Avg diffusion rate calculation

(5.8x10-7\*5 mg/cm2)/24=1.2x10-7 mg/cm2/h

The median background corrected median concentration in the receiving solution was 0.0029 µg /cm2

Note: Same value was calculated by Julander et al. (2020)

*Calculations from Bress and Bidanset (1991)*

**Concentration of Pb applied:** The dosing was reported as 10mg of total Pb oxide. No information was provided on how the Pb was dosed on the skin.

**Model (in vitro/in vivo):** in vitro

**Study design:** experimental, J diffusion tube

**Species:** guinea pig (skin)

**Surface area of skin treated:** 1.3 m2

**Applied dose: (load):** 7.7 mg/cm2

Pb content in the receptor fluid was below the limit of detection (1 µg).

Total Pb applied:

7.7 mg/cm2\*1.3 cm2= 10 mg= 10000ug

Avg diffusion rate calculation

(0.0001\*7.7 mg/cm2)/24 hr=<3x10-5mg/cm2/h

Note: Same value was calculated by Hostynek et al. (1993)

**Other results:**

Receptor fluid fraction calculation:

<1.0ug/10000ug= 0.0001

Pb content in tissue (µg/wet gram tissue)

Blood- 0.33±0.02 µg/g (control- 0.35±0.05)

Brain- 0.36±0.04 µg/g (control- 0.40±0.03)

Liver- 0.37±0.05 µg/g (control- 0.33±0.04)

Kidney- 0.36±0.03 µg/g (control- 0.40±0.03)

**Model:** In vivo

**Study design:** Experimental

**Species:** Guinea Pig

Other results:

Pb content in tissue (µg/wet gram tissue)

Blood- 0.33±0.02 µg/g (control- 0.35±0.05)

Brain- 0.36±0.04 µg/g (control- 0.40±0.03)

Liver- 0.37±0.05 µg/g (control- 0.33±0.04)

Kidney- 0.36±0.03 µg/g (control- 0.40±0.03)

*Other Results from Sun et al. (2002)*

Metal: Pb oxide

The cumulative Pb in urine collected after 12 days of exposure compared to pre-dosing levels was 115.9 ng in the Pb nitrate exposed group vs. 10.8 ng in the control group.

Metal: Pb metal

The cumulative Pb in urine collected after 12 days of exposure compared to pre-dosing levels was 736.6 ng in the Pb nitrate exposed group vs. 10.8 ng in the control group.

**Pb2+ nitrate**

*Calculations from Pan et al. 2010*

**Concentration of Pb applied:** 120 mM Pb in 0.5 ml in double distilled water or synthetic sweat (39.74 mg/ml)

**Surface area of skin treated:** 0.785 cm2

**Applied dose: (load):** 25.31 mg/cm2

**Contact time (duration of application):** 10 hours

120mM Pb nitrate= 39.74 mg/ml= 39.74 mg/cm3

Cumulative dose (receptor)

intact skin (Water)- 0.20 ±0.13 µg/cm2

SC stripped skin (water)- 0.43±0.12 µg/cm2

Intact skin (syn sweat)- 0.19±0.12 µg/cm2

39.74 mg/ml \* 0.5ml= 19.52 mg.

19.52mg/0.785 cm2= 25.31 mg/cm2= 25310 ug/cm2

Receptor fluid fraction calculation:

Intact skin (water): (0.20 µg /cm2)/(25310ug/ cm2)= 8x10-6

SC stripped skin (water): (0.43 µg / cm2)/(25310ug/ cm2)= 1.7x10-5

Intact skin (syn sweat): (0.19 µg / cm2)/(25310 ug/ cm2)= 7.5x10-6

Avg diffusion rate calculation

Intact skin (water): (8.0x10-6\*25.31 mg/cm2)/10 hr= 2.0x10-5 mg/cm2/h

SC stripped skin (water): (1.7x10-5\*25.31 mg/cm2)/10 hr= 4.3x10-5 mg/cm2/h

Intact skin (syn sweat): (7.5x10-6\*25.31 mg/cm2)/10 hr= 1.9x10-5 mg/cm2/h

Intact skin (water): 2.0x10-5 mg/cm2/h/39.74 mg/ml= 5.0 x10-7 cm/h

SC stripped skin (water): 4.2x10-5 mg/cm2/h/ 39.74 mg/ml= 1.1x10-6 cm/h

Intact skin (syn sweat): 1.9x10-5 mg/cm2/h/ 39.74 mg/ml= 4.8x10-7 cm/h

Cumulative dose (skin)

Intact skin (Water)- 14.38 µg/mg

SC Stripped skin- 0.43 µg/mg (approx.)

Syn sweat – 3 µg/mg (approx.)

Other results

Pb concentrations:

Skin: 1.8 ug/mg (approx.)

Liver- 0.00038 ug/mg (approx)

Kidney- 0.016 ug/mg (approx.)

Histological results:

Mild to moderate chronic inflammation of subcutis and dermis layers. Significant chronic inflammation in subcutis layer was observed in another area. Mild fat necrosis in dermis layer was also observed.

Proteomic analysis:

19 proteins were upregulated and 3 proteins were downregulated. 4 proteins showed a consistent >2.5 fold increase in upregulation compared to controls. These 4 proteins were identified as glucose- related protein precursor (GRP)78, K14, alpha-actin, and Rho GDP-dissociation inhibitor 2 (RhoGDI2)

*Other Results from Sun et al. (2002)*

The cumulative Pb in urine collected after 12 days of exposure compared to pre-dosing levels was 736.6 ng in the Pb nitrate exposed group vs. 10.8 ng in the control group.

**Pb subacetate**

*Other results from King et al. 1978*

Pb was detected in 3 of 4 layers in the 20 minute collection and 4 of 4 layers in the 90 minute collection, with decreasing concentrations observed in deeper layers. The 90 minute samples showed an increased amount of Pb in deeper layers of skin compared to the 20 minute samples, suggesting an increasing penetration over time, though this this was not confirmed with statistical analyses.

**Pb Orthoarsenate**

*Other results from Kunze and Laug 1948*

Tissue fraction calculation

Intact skin dosing: 0.85 µg/101500ug \*100= 0.0008%/g wet tissue

Pb content (µg) in wet grams of kidney

0.85 µg/g (Intact skin dosing)

0.55 µg/g (control)

Total Pb applied: 3.5mg/cm2 \* 29 cm2= 101.5 mg= 101500 ug

*Other results from Sun et al. 2002*

The cumulative Pb in urine collected after 12 days of exposure compared to pre-dosing levels was 123.1 ng in the Pb sulfate exposed group vs. 10.8 ng in the control group.