

# **Are Contact Allergies due to Tattooing a Problem ?**

Observations from the IVDK

Axel Schnuch

IVDK

Göttingen

**IVDK:**

>50 dermatological  
centres in  
central Europa



- Register Data on *allergic Contact Dermatitis*
- > 12.000 Patients / Year
- > 250.000 Patients collected
- Data centre in Göttingen



....data on allergic contact dermatitis:

## Results of Allergy Tests („patch tests“)



p-Phenylenediamine

## Data on allergic contact dermatitis

-Patch test data (sensitization to ?)

-Exposure data (occupation, „contactant“ – sensitization caused by ?)

-Clinical data (e.g. site of eczema)

K1	Textiles
K2	cosmetics/creams
K5	drugs
K11	Rubber
<b>K51</b>	<b>TATTOOS</b>

Is there a role for tattooing in allergic contact dermatitis ?

Data registered in the IVDK from **2004 to 2012.**

**n= 116.484**

Selection and analysis of the „K51“ subpopulation:

**n= 112 (= 0.1%)**

**NO**

## Selection and analysis of the „K51“ subpopulation:

Patients were patch tested

a) with commercial patch test preparations

b) (some) with their „own material“ (e.g. tattoo material)

## Results of patch testing:

Substance	n tested	n Pos	% pos (Stand).
Nickel (II)-sulfat 6*H2O	104	16	14.8
p-Phenylendiamine (Free Base) (CI 76060)	49	14	24.6
p-Toluyldiamine (free Base)	36	12	23.9
Disperse Orange 3 (CI 11005)	49	12	18.7
p-Aminophenol (CI 76550)	37	11	22.4
N-Isopropyl-N'-phenyl-p-phenylendiamine	104	8	5.4
3-Aminophenol	25	7	19.5
Fragrance Mix	107	7	6.1
Myroxylon pereirae (Balm of Peru)	104	7	10.6



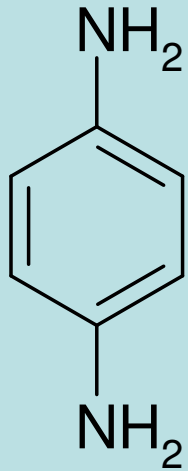


## Possible explanations for this allergen pattern:

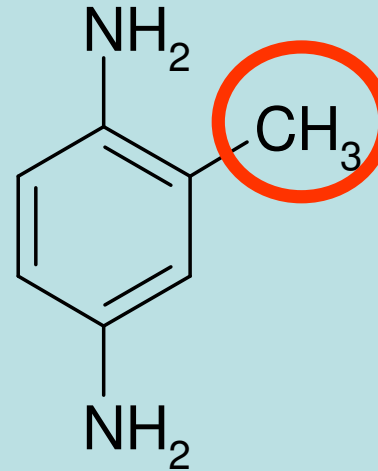
1. Primary sensitization to PPD (through temporary / Henna tattoos ?)  
and cross reactions to other dyes

2. Primary sensitization to amino- and azo- dyes and cross reactions to PPD  
and derivatives

## Cross reactions:



p-Phenyldiamin



p-Toluyldiamin

~ 3 / 4 of PPD allergics react to PTD\*

## Results of patch testing:

Some patients (n=75) were patch tested with their „own material“

**n= 24 with tattoo material**

**5/24 reacted to tattoo material**

## Results of patch testing:

Some patients (n=75) were patch tested with their „own material“

**n= 24 with tattoo material)**

**5/24 reacted to tattoo material**

1.

Permanent Make up lila	100	%		++
Permanent Make up bräunlich	100	%		+
Allergen	?			

2.

Substanz für Tattoo	100	%		+
Allergen	?			

## Results of patch testing:

5/24 reacted to tattoo material

3.

<b>Tattoofarbe rosa</b>	<b>100</b>	<b>%</b>		<b>(+)</b>
<b>Allergens</b>				
<b>Cadmiumchlorid</b>	<b>0.5</b>	<b>%</b>	<b>Petr</b>	<b>++</b>
<b>Cadmiumsulfat</b>	<b>2</b>	<b>%</b>	<b>Aqu</b>	<b>+</b>
<b>Eisensulfat</b>	<b>5</b>	<b>%</b>	<b>Petr</b>	<b>++</b>

## Results of patch testing:

**5/24 reacted to tattoo material**

4.

<b>Tattoofarbe 1:10</b>	<b>100</b>	<b>%</b>		<b>+</b>
<b>Allergens</b>				
<b>Ammoniumpersulfat</b>	<b>2.5</b>	<b>%</b>	<b>Petr</b>	<b>+</b>
<b>Narcissus absolut</b>	<b>2</b>	<b>%</b>	<b>Petr</b>	<b>+</b>

## Results of patch testing:

5/24 reacted to tattoo material

5.

<b>Deep Purple 20 z</b>	<b>100</b>	<b>%</b>		<b>+</b>
<b>Allergens</b>				
<b>p-Phenylendiamin (CI 76060)</b>	<b>1</b>	<b>%</b>	<b>Petr</b>	<b>+</b>

## Intermediate Summary:

1. Contact allergy is rarely caused by tattooing

2. The allergen frequency and spectrum (**aromatic amines**) is plausible

3. Anorganic pigments are rarely the cause of contact allergy  
(except Ni containing)

HOWEVER:





## Zusammensetzung/Angaben zu Bestandteilen

### Chemische Charakterisierung

**Beschreibung (INCI):** Farzubereitung

Aqua dest. Pigmente (wechselnd): CI 77

Shellac (Ph.Eur./USP): CAS-No.9000-59-3

39-8; Propylene Glycol CAS-No. 57-55-6

CAS-No. 67-63-0; Glycerin pflanzlich (Ph.Eur./USP) CAS-No. 56-81-5;

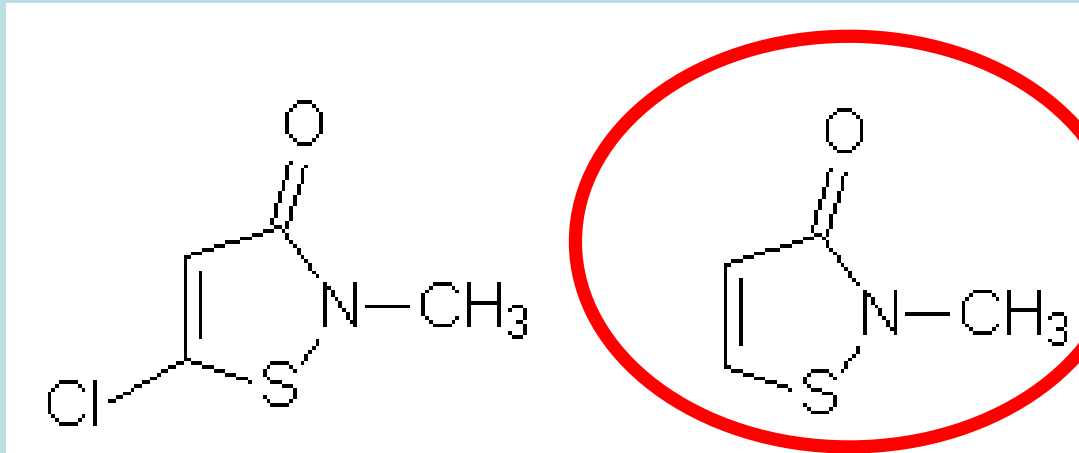
Block- Copolymer mit pigmentaffinen Gruppen; Phenoxyethanol CAS-No.

122-99-6; **Methylisothiazolinone** CAS-No. 2682-20-4; Benzisothiazolinone

CAS-No. 2634-33-5; Aminomethyl Propanol CAS-No. 124-68-5;

**A potent contact allergen !**

# Identification of new problems by surveillance



**Chlormethylisothiazolinon**

**Methylisothiazolinon**

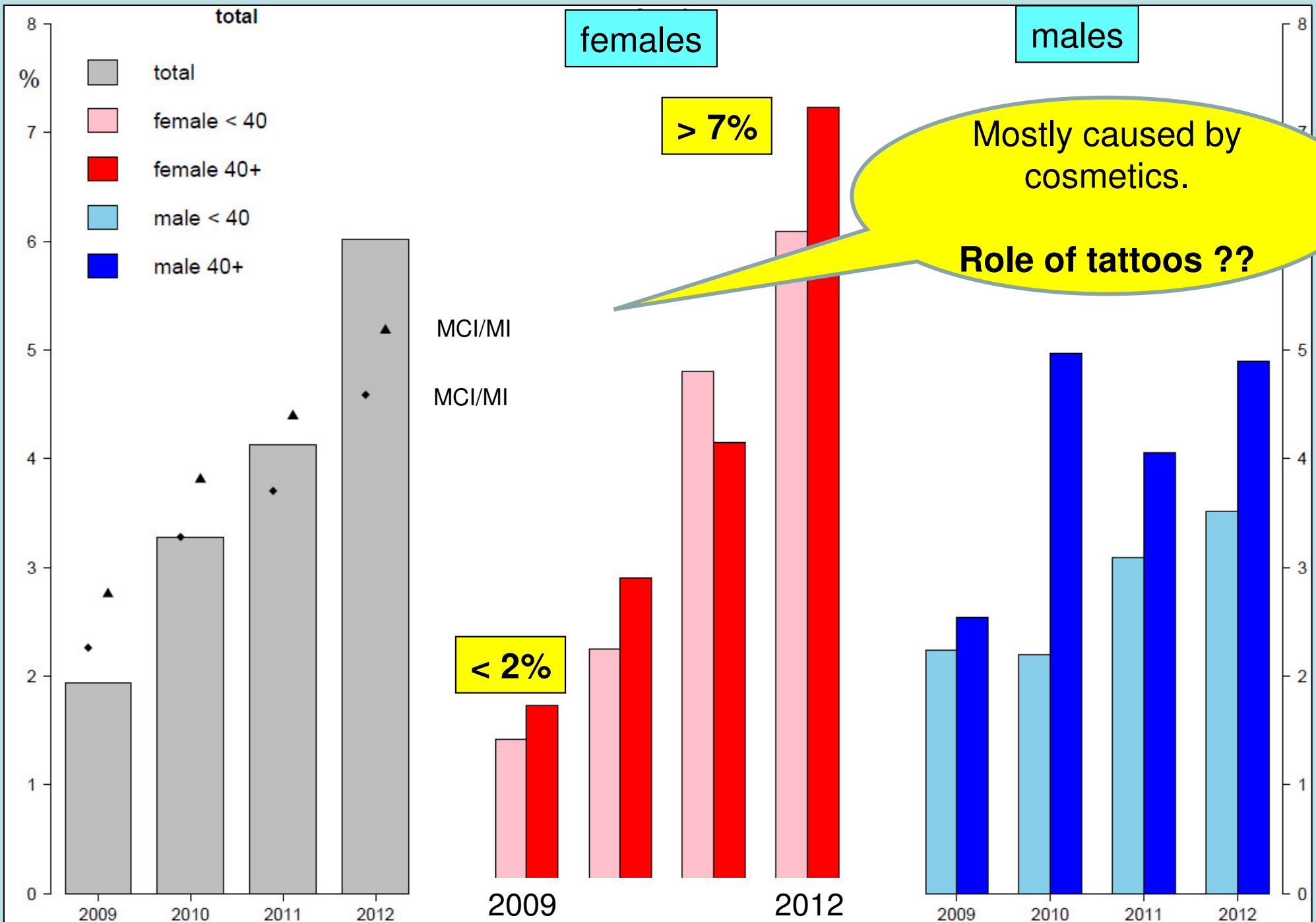
## Preservative

in:

- paints
- glues
- metal working fluids,
- liquid soaps....
  
- Cosmetics

**Tattoo inks**

# Allergic reactions to Methylisothiazolinone (IVDK 2009 and 2012)



## Are Contact Allergies due to Tattooing a Problem ?

**(aromatic amino /azo compounds)  
in tattoos**

Textile allergy



Hair dye allergy



# Are Contact Allergies due to Tattooing a Problem ?

Wall paints



**Preservative: methylisothiazolinone  
in tattoos**

cosmetics

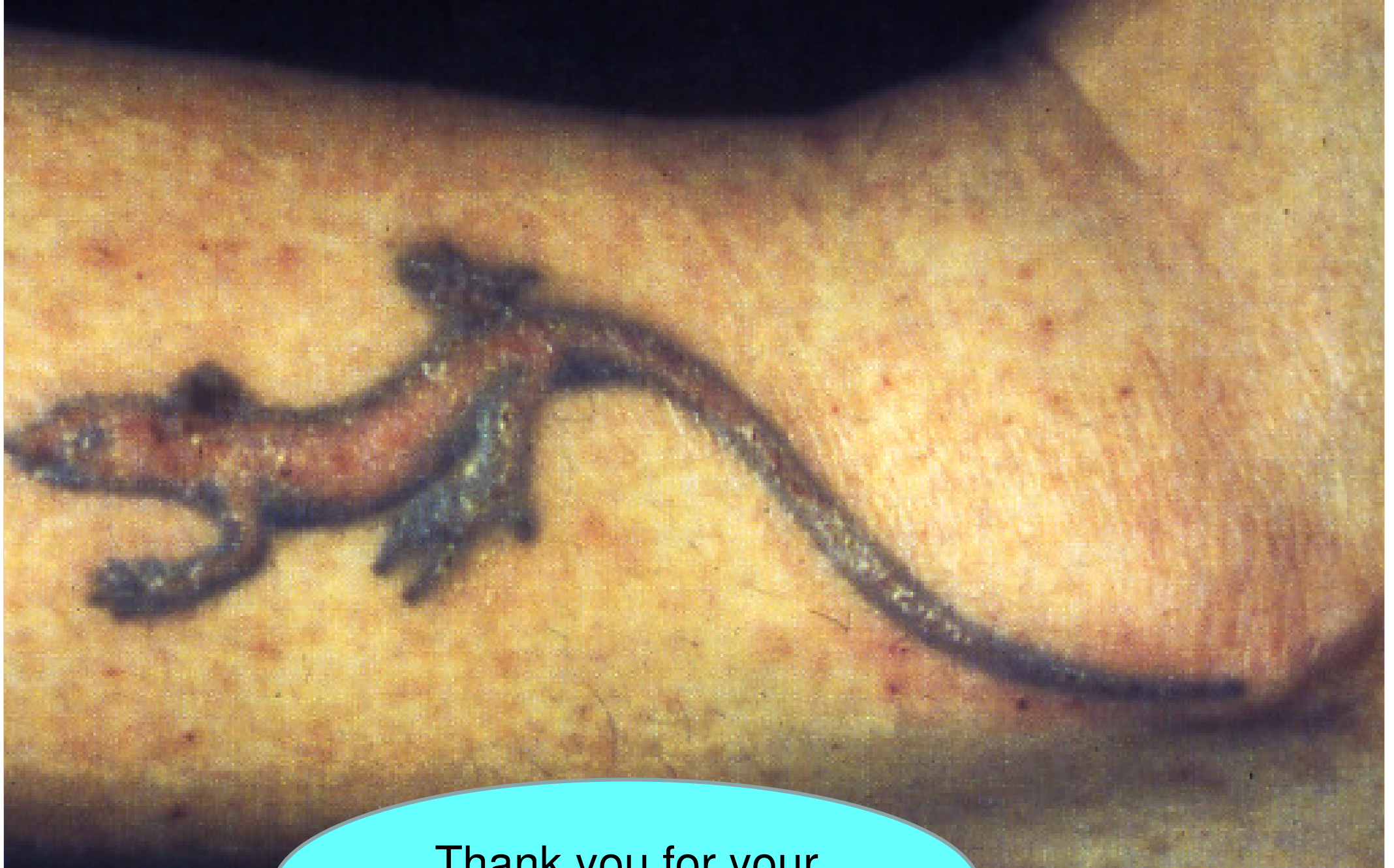


## The Problem:



„Promiscuity of  
the allergen“





Thank you for your  
attention