

AR226-1664

From: CAVANARJ--ISDCVVM1
 To: DEVOEDW --ISDCVVM1 David W. DeVoe

Date and time 11/04/94 13:15:25
 ADATOY --ISDCVVM1 Yasef Adato

From: Robert J. Cavanaugh 999-4385
 Subject: RE: MP in Shaving Product

See the attached note from Gerry Kennedy on C-8 levels from exposure to shaving cream. There is one error in them: the concentration of C-8 is 20 ppm in the MP-1600, not in the shaving gel. The anticipated level of MP-1660 is 1% in Edge, thus Gerry's numbers are high by 100X. In spite of this, I agree with his conclusion that this is a risky area. A daily application rate of 2 micrograms is still one third of the CEG.

Another way to look at this is to calculate the steady state level of C-8 in the blood. At equilibrium, 2 micrograms will be absorbed per day and 2 micrograms will be eliminated. The half life of C-8 in the body is about 3 years. The first order rate equation is $\ln(C_1/C_2) = -kt$ where C is the concentration, k is the rate constant and t is time. For the half life, $C_1/C_2 = 2$ and k can then be calculated to be 0.000633/day. From this, you can calculate that to eliminate 2 micrograms per day, there must be 3160 micrograms present. In 5 Kg of blood, this would be 0.63 ppm. This is starting to get a little close to the level which concern us. I believe these are a few ppm (GERRY: is this correct?).

My recommendation is to stay away from this application. We're getting near the concern limit on C-8. PTFE may be an excellent dry lubricant but I question how well it will working in a gel which is already lubricated.

There may be some applications where skin contact would be acceptable. One would be in the PTFE/Krytox grease as a nerve agent repellent. This is not a repeated use application and I would prefer to take my chances with 2 micrograms of C-8 rather than a gram of Sarin.

Let me know your thoughts on this as we have to get back to First Brands.

*** Forwarding note from BUXTONLW--ISDCVVM1 11/03/94 16:40 ***

To: CAVANARJ--ISDCVVM1 Robert J. Cavanaugh

from: Bill Buxton, FLPR Reg Affairs, CR/713/110 (99-94658)
 Subject: RE: MP in Shaving Product

Bob,

Attached is a calculation of potential exposure level to C-8 based on your initial assumptions. Note the Gerry also assumes 100% transfer at each step.

Overall, this does not look like a good use for this product.

Let me know if you have further questions.....Bill.

*** Forwarding note from KENNEDY --HSKVAX 10/24/94 09:10 ***

Subj: RE: MP in Shaving Product

From: NAME: GERALD L KENNEDY
 FUNC: CR&D
 TEL: 366-5259
 To: NAME: BUXTONLW@ISDCVVM1

<KENNEDY AT A1 AT HSKVAX>

HERE IS MY SAMPLE CALCULATION WHICH I THINK SUGGESTS THAT WE MOVE SLOWLY INTO THIS APPLICATION.

1) C-8 IN EDGE - 20PPM, OR 200 MICROG/10 GRAM EDGE APPLICATION

LWB000678

- 2) 100% DERMAL TRANSFER EQUALS DAILY DOSE OF 200 MICROG/DAY
 3) OUR CEC IS 0.0003 MG/M³; DAILY AIR EXCHANGE OF 20 M³ PRESENTS 0.0060MG OR 6 MICROGRAMS TO THE LUNG.
 4) THE DAILY ALLOWED INHALATION DOSE THEN BECOMES (IF THIS MATH IS RIGHT) ABOUT 30-35 TIMES LESS THAN THE AMOUNT PRESENTED TO THE SKIN IN ONE APPLICATION OF EDGE.
 5) ANOTHER WAY TO LOOK AT THROUGH BLOOD KINETICS
 6) 70KG PERSON IS ABOUT 7% BLOOD OR 5 KG BLOOD
 7) C-8 DOES GET TO AND STAY IN BLOOD-ASSUME TOTAL TRANSFER FROM ONE EDGE APPLICATION TO BLOOD- 200 MICROG/5 KG BLOOD
 40 MICROG/KG - 40 PPM
 8) WITH A 1/2 LIFE IN YEARS, SAY 3 AS BEST CURRENT ESTIMATE; STEADY STATE WOULD BE IN THE PPM RANGE (I DIDN'T CAN'T DO THAT CALCULATION BUT 200 MICROG /DAY WITH LITTLE CLEARANCE WOULD GET UP THERE IN A HURRY.
 YOU MIGHT WANT TO GO OVER AND SEE IF THIS MAKES SENSE TO YOU, BUT IT GETS ME CLOSE TO OUT OF BOUNDS IN A HURRY.

2.0 mg/kg apply
 vs
 0.0003 mg/kg CEC
 (very close)

cc: CAVANAH--ISGDCVNI Robert Cavanaugh KENNEDY --HSKVAX GERALD L KENNEDY
 BUXTON--ISGDCVNI L. William Buxton LEVY --EU01S2 DANNY LEVY
 TURNERJ --EU01S2 Jeff C. Turner BELLENGA--ISGDCVNI Gregory A. Bellen

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