CONAM

QSL Plus Quality Services Laboratories, Inc.

MHG SERVICES

P. 8

DATE: 11-1-05 FROM: Bill JOHNSTON

TO: JUDY

COMPANY: NRC

FAX NO.: 610-337-5269

NO. OF PAGES INCLUDING THIS ONE: 3

If you do not receive all pages, please call 610-497-0400

12-16559-02
03035114/2005004

NMSS/RGNI MATERIALS-004

5 Nealy Boulevard, Trainer, PA 19061 • Phone: (610) 497-0400 • Fax: (610) 497-0724 • Toll Free: (888) 972-9633

Regional Hqts: • East Coast - Philadelphia (610) 237-3928 • Southeast - Monroe (704) 291-2360 • Gulf Coast - Houston (713) 473-6111 • Midwest - Chicago (630) 260-1650 • West Coast - Los Angeles (562) 597-3932
Corporate Hqts: Princeton Junction, NJ • (609) 716-4150 • Fax (609) 716-4145 • Email: ops@qslplus.com

Pg. 1

[redacted] INCIDENT OF 10/27/05

EXPOSURE CALCULATIONS

IR 192 5.2 R/HR AT 1FT WITH 1 CURIE

DOSE TO THE HAND

20.8 R/HR AT 6", 83.2 R/HR AT 3", 332.8 R/HR AT 1½"
1331.2 R/HR AT ¾", 5324.8 R/HR AT ⅜"

21.8 CURIES

SO WITH 21.8 ci = 116,080.64 R/HR
1934.67 R/MIN
32.24 R/SEC X 10 SEC = 322.4 REm

DOSE TO THE WHOLE BODY

$$\frac{5.2\ R/HR}{X} = \frac{.667^2}{1^2}$$

X = 11.71 R/HR AT A DISTANCE OF 8"

SO WITH 21.8 ci = 255.28 R/HR, 4.25 R/MIN, .07 R/SEC
OR 70 mR/SEC SO 70 mR X 10 SEC = 700 mR

PLUS

USING 11 FEET DISTANCE AS AN AVERAGE FOR THE REMAINING 50 SECONDS.

$$\frac{X}{113360\ mR/HR} = \frac{1^2}{11^2} \quad \text{SO} \quad \frac{X}{113360} = \frac{1}{121} \quad \text{SO} \quad 121X = 113360$$

X = 936.9 mR/HR

OR 15.6 mR/MIN OR .26 mR/SEC SO .26 X 50 SEC = 13 mR

TOTAL ESTIMATED WHOLE BODY DOSE — 700 mR + 13 mR = 713 mR

BILL JOHNSTON RSM Bill R. Johnston

21.8c: 10-31-05 EXPOSURE CALCULATIONS BASED ON RE-INACTMENT WITH [redacted] WITH NRC PRESENT

EXTREMITIES

HANDS IN CONTACT WITH GUIDETUBE FOR 7 SECONDS

225.7REm

WHOLE BODY

DISTANCE OF 20" TO THIGH ABOVE THE KNEE FOR 7SEC

5.2 R/HR

$$\frac{X}{113360 \text{ mR/HR}} = \frac{1^2}{1.667^2}$$

$$\frac{X}{113360} = \frac{1}{2.78}$$

$$2.78X = 113360$$

$$X = 40{,}777 \text{ mR/HR}$$

680 mR/min

11.3 mR/SEC X 7SEC = 79 mR

USING THE SAME AVERAGE OF 11 FEET FOR THE REMAINING

53 SECONDS = .26 mR/SEC X 53 = 14 mR

SO TOTAL WHOLE BODY EXPOSURE = 93 mR

$$\begin{array}{r} 79 \\ +14 \\ \hline 93 \end{array}$$