Dragon, Karen E. (CDC/NIOSH/EID)

From: DanMcKeel2@aol.com
Sent: Sunday, August 05, 2012 11:16 AM
To: NIOSH Docket Office (CDC); Katz, Ted (CDC/NIOSH/OD)
Cc: danmckeel2@aol.com
Subject: Board & Docket 140 submission (GSI site related)
Attachments: McKeel_SC&AAltModel_comment.pdf

Ted Katz, ABRWH DFO
NIOSH Docket 140 (GSI) Office

August 5, 2012

Attachment: <McKeel_SC&AAltModel_comment.pdf> 793 K

Dear Mr. Katz and NIOSH Docket Office,

I ask Mr. Katz to please distribute the attached PDF comment to all ABRWH members, including TBD-6000 work group members and staff.

I also request the NIOSH Docket Office consider my paper for posting on the DCAS website as a Discussion paper under Docket 140 (GSI) for the upcoming 8.28.12 TBD-6000 work group meeting.

The main body of this communication is a critique of SC&A's paper dated 7.25.12 on an "Alternative Model for Calculating Uranium Intakes at GSI." The new SC&A intake method is posted as as a Discussion paper for the 8.28.12 TBD-6000 work group meeting. Appendix A to this submission is my response to the explanation Ted Katz provided to Dan McKeel on 7.30.12 about the way this SC&A 7.25.12 method paper was tasked by Dr. Paul Ziemer (chair of the TBD-6000 work group) and himself as DFO, apparently acting on their own volition. Thank you.

Sincerely -- Dan McKeel

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Dan McKeel GSI SEC-105 Co-Petitioner Comment to NIOSH Docket 140 (GSI)
(August 5, 2012)
[Text of the original SC&A paper in black; McKeel Comments in blue]

TO: Advisory Board on Radiation and Worker Health Work Group on TBD-6000 FROM: Robert Anigstein, Stephen Marschke, and John Mauro, SC&A SUBJECT: Alternative Model for the Calculation of Uranium Intakes at GSI DATE: July 25, 2012

Alternative Model for the Calculation of Uranium Intakes at GSI

1 Background

During Meeting 84 of the Advisory Board on Radiation and Worker Health, the Board tasked SC&A with reviewing NIOSH's use of surrogate data for estimating intakes of uranium at General Steel Industries (GSI). Anigstein (2012) found that the use of the concentration of airborne uranium dust, based on the uranium slug stamping scenario as a surrogate for airborne dust concentrations during uranium handling operations at GSI, does not comply with the five criteria for the use of surrogate data adopted by the Advisory Board (ABRWH 2010). He also considered other sources of surrogate data and found issues with the use of these data for GSI. However, as stated in his report, "The contamination levels on the floor of the Old Betatron Building at the time of the 1993 cleanup, reported by Murray and Brown (1994), together with the depletion rate and the varying hours of uranium handling operations at GSI, could be used to calculate the average surficial uranium concentrations during each year of the operational and residual periods." **We believe that NIOSH can calculate bounding values of uranium intakes by GSI workers without the use of surrogate data. In accordance with advice from Paul Ziemer, Chair of the ABRWH Work Group on TBD-6000, we present an explicit example of our suggested approach.**

MCKEEL COMMENT: Given comments Dr. Ziemer made at the October 12, 2010 TBD-6000 that SC&A needs to avoid the perception of "being out front" of NIOSH on developing a method for calculating air activation doses, I find the bolded passage to be quite amazing. Here Dr. Ziemer is clearly encouraging and giving SC&A license to develop a new method that NIOSH *should* use, by implication, so they "*can calculate bounding values of uranium intakes for the operational and residual periods*." Dr. Ziemer is unequivocally tasking SC&A to carry out NIOSH's work to compensate for SC&A's finding that NIOSH's current method does not meet Board surrogate data criteria. In other words the client whom SC&A serves (the Board, TBD-6000 work group) is ordering a method they need to support NIOSH's contention the agency can bound uranium intakes during 1953 to 1993 at GSI. Correspondence between the Board DFO, Ted Katz, and Dan McKeel, which is included in Appendix A to this commentary, indicates that Dr. Ziemer and Ted Katz collaborated in tasking SC&A to prepare this paper. The petitioners strongly believe that this tasking is improper, and that this paper should be withdrawn, and should be rejected by the rest of the Board and should not be allowed to be used by NIOSH.

Allen and Glover (2007) described two pathways for the inhalation and concomitant inadvertent ingestion of uranium dust: intakes of uranium aerosols during uranium handling operations and the later resuspension of dust that settled to the floor during these operations. Anigstein (2012) raised several questions regarding their approach, including the use of a uranium aerosol concentration, based on surrogate data, the duration of settling of the aerosols, and the possible sloughing off of large particles of uranium oxide that contribute to the accumulation of uranium on the floor but not to

the aerosol generated during handling operations. He found that such an approach is not suitable for calculating uranium contamination generated during the intermittent uranium handling operations. He also questioned the methodology of calculating the surficial uranium contamination levels throughout the operational and residual periods based on the accumulation of uranium during one year of uranium handling operations, with no year-to-year carryover and no removal.

2 Methodology of Alternative Model

Our alternative approach assumes the continuous introduction of uranium dust throughout the operational period. The average rate of accumulation of uranium on the floor during each time period specified in the purchase orders for uranium radiography issued by the Mallinckrodt Chemical Works (MCW) is proportional to the fractional time of uranium handling during that time period. The removal rate is based on the exponential source-term depletion rate recommended in OTIB-0070 (Sharfi 2012). The final surficial concentration is given by the average contamination level on the floor of the Old Betatron Building at the time of the FUSRAP cleanup, reported by Murray and Brown (1994). The airborne concentration due to resuspension at any time during both the operational and residual periods is calculated by applying the appropriate resuspension factor to the time-varying surficial concentration. The airborne concentration during uranium handling operations is calculated from the derived accumulation rate and the deposition velocity of the uranium aerosol.

MCKEEL COMMENT: The petitioners challenge all of the assumptions stated above that are the basic scientific underpinnings of this new alternate model for calculating uranium intakes at GSI.

Challenge 1. There is no *a priori* reason to expect, without any measurements to back this up, that uranium dust was necessarily "continuously introduced" and was always proportional to "fractional uranium handling time" as indicated by GSI purchase orders, for several reasons. There are no purchase orders for 1953-57. The mix of uranium billets, dingots, ingots and Betatron slices was not known. Different uranium products could easily have shed different amounts of "dust" from chafing of the outer surfaces that consisted of pure uranium and oxide for billets and parts of slices, and consisted of "bomb" Mg-fluoride residue of different chemical composition (trace impurities) and thicknesses in the case of Ur ingots and dingots.

Challenge 2. Each of the physical forms of uranium metal could have shed different sized components that decayed differently thereby resulting in four simultaneous exponential decay curves. This assumption implies the floor dust was not disturbed during the residual period. We know this area was repurposed, the floor was power washed and vacuumed, and possibly replaced or resurfaced, and these operations may have, and probably did, disturb the surficial layer and resulted in peaks of uranium dust being released into the air (resuspended) and causing different degrees of intake by workers at different time periods.

Challenge 3. The Murray and Brown 1994 result for the Old Betatron Building is not transposable to the New Betatron Building or to the rest of the GSI building complex. The nearest Building to the Old Betatron facility was Building 10 that was located 100 yards from it.

In short, the actual physical attributes of the components of intake dose during a given year are not known. The mathematical assumptions that indicate smoothly changing values are mere suppositions that are pseudoscientific and not defensible. The Sharfi data on which SC&A depends for validating its model assumptions, clearly is surrogate data. So SC&A has substituted one discredited surrogate source, the slug production facility of TBD-6000, for another used by

Sharfi 2012. The question then arises, does use of Sharfi 2012 data fulfill all 5 Board criteria for surrogate data? And since SC&A chose Sharfi 2012 data to base its alternate method upon, at least in part, who will independently assess the appropriateness of this data source with respect to the Board surrogate data criteria? SC&A should not assess itself.

2.1 Surficial Uranium Activity Concentration

The surficial uranium activity concentration can be derived from the following differential equation:

$$\frac{d\sigma_i}{dt} = -\mu\,\sigma_i + f_i R \qquad (1)$$

σ_i = surficial uranium concentration due to accumulation during time period i (Bq/m^2)

t = time (d)

μ = fractional removal rate
= $6.7 \times 10^{-4}\ d^{-1}$ (Sharfi 2012)

f_i = fraction of time during period i during which uranium handling operations occurred

$$= \frac{T_i}{t_{i2} - t_{i1}}$$

T_i = duration of uranium handling operations during time period i

t_{i1} = start of time period i

t_{i2} = end of time period i

R = rate of uranium accumulation during uranium handling operations ($Bq\ m^{-2}\ d^{-1}$)

Integrating equation 1, using the boundary condition $s_i(t_{i1}) = 0$, we obtain the following expression for the surficial activity concentration at time t:

$s_i(t)$ = surficial uranium activity concentration at time t due to accumulation during time period i (Bq/m^2)

Page 3

$S(t)$ = total surficial uranium activity concentration at time t (Bq/m^2)

$n(t)$ = number of uranium-handling time intervals up to time t

Table 1 lists the dates covered by the purchase orders for uranium radiography issued by MCW. The total hours of uranium handling were based on the monthly or annual costs for each period, as well as on the hourly rate, as specified by the purchase orders. These were divided by the length of each period (in hours) to calculate the fraction of each period during which uranium handling operations took place, represented by the symbol f_i in equations 1 and 2. Because the frequency of uranium handling operations prior to March 1, 1958, is unknown, the highest fraction of the later periods was assigned to the period starting from January 1, 1953, the beginning of covered operations at GSI.

Table 1. Uranium Handling Times, Based on MCW Purchase Orders

Period covered by PO			Uranium handling	
Dates		Hours[a]	Total (h)[b]	Fraction[c]
1/1/53[d]	2/28/58[d]			0.0499[e]
3/1/58	6/30/58	2928	125	0.0427
7/1/58	10/31/58	2952	112.5	0.0381
11/1/58	6/30/59	5808	225	0.0387
7/1/59	6/30/60	8784	337.5	0.0384
7/1/60	6/30/61	8760	337.5	0.0385
7/1/61	6/30/62	8760	437.5	0.0499
7/1/62	6/30/63	8760	125	0.0143
7/1/63	6/30/64	8784	28.12	0.0032
7/1/64	6/30/65	8760	28.12	0.0032
7/1/65	6/30/66	8760	12.86	0.0015

[a] Duration of period

[b] Total hours of uranium handling operations during specified time period

[c] Fraction of time devoted to uranium handling operations (column 4 ÷ column 3)

[d] No purchase orders found for this period

[e] Maximum of all later periods

To evaluate equation 2 at time t, we must solve for R. We can derive R from equation 2, provided we know the value of $S(t)$ at some known time t. Such a value can be obtained from the results of the survey of the Old Betatron Building performed by the Oak Ridge National Laboratory (ORNL) on June 7, 1993, as reported by Murray and Brown (1994, Table 4). The authors list the a-radiation levels at 31 random locations on the first floor of this building, as shown in Table 2 of the present memo. These random samples constitute the best available data for estimating the average contamination level on the floor of the shooting room of the Old Betatron Building. Since the authors state that the MDA = 50 dpm/100 cm^2, we set readings of "<MDA" to one-half that value—25 dpm/100 cm^2. The average of the 31 readings— converted

to units of Bq/m^2—is equal to 43.6 Bq/m^2. The time t_f is expressed in days since January 1, 1953, the start of the operational period at GSI, until the date of the survey.

Figure 1 shows the locations of the measurements reported by Murray and Brown (1994), superimposed on a map of the first floor of the Old Betatron Building. The blue squares denote the random locations. In addition, the ORNL team scanned the entire floor using large-area floor monitors and G-M pancake probes. Red squares indicate locations that showed elevated ß/_ activities. Since they represent biased samples, the activities at these locations were not used in the present calculations but are shown to indicate the localized distribution of these "hot spots." At 13 of these 25 locations, the a-radiation levels were <MDA. We note that a separate ORNL survey of the New Betatron Building "showed no residual ^{238}U attributable to former AEC-supported operations at this site." (Murray and Uziel 1992)

MCKEEL COMMENT ON SECTION **2.1 Surficial Uranium Activity Concentration**:

1. OLD BETATRON BUILDING. As Dan McKeel, GSI co-petitioner explained at length at the June 14, 2012, TBD-6000 work group meeting, the petitioner's view is that the tiny amount of uranium dust data collected by ORNL for DOE for the GSI Old Betatron facility at the end of the residual contamination period bears essentially no relation to radioactivity in 1974 at the start of the residual period or at any time during the residual period except on the October day in 1993 when the ORNL-DOE alpha and beta measurements were made.

ORNL did not survey any other areas or the GSI uranium transport pathway where uranium ingots, dingots, billets and Betatron slices were brought by crane and railroad transfer cars on tracks that ran through building 7, 8, 9 and 10 beside the foundry and outside into the Old Betatron Building entry tunnel.

The Old Betatron Building had been scoured and power washed and used to store leaky transformers and the old Betatron hardware. We believe based on comparisons of what the Old Betatron shooting room floor looked like at the SINEW site visit in September 2006 in comparison with photos we have during the 1953-mid 1966 covered AEC contract period, that tons of floor dust had been removed by some means. We can't be sure when or how that was done. There are no records. There are no real measured general air, or breathing zone, or urine uranium bioassay data for any part of the GSI residual period. There is no similar enough EEOICPA site to serve as a surrogate site.

Basing calculations on the limited uranium alpha and beta activity data for one day at the end of the residual period is absurd, and totally scientifically indefensible and claimant adverse.

2. NEW BETATRON BUILDING. By the time of the ORNL radiation surveys in October 1993, the New Betatron facility had undergone an even more stringent cleanup and repurposing as office spaces. There are no written or precise worker testimony to indicate exactly what was done. The original control room, wall, rafter and tunnel areas were not fully accessible to ORNL during the cleanup. Thus, for SC&A to conclude that because ORNL found no residual radioactivity in the New Betatron facility in 1993 (a) is not surprising, and (b) does not mean, of course, that no uranium contamination was present during the residual period, a supposition that is scientifically implausible and indefensible speculation and lacks face validity.

It must be emphasized that no Betatron or uranium direct source photon, beta or neutron monitoring was done in either the Old or New Betatron facilities at GSI during the covered period or the residual period up to the time of the ORNL radiologic surveys in 1993. There was limited film badge data on 108 Betatron and isotope radiographers 1964 through 1973 out of a work force of 3,000 people. I photographed New Betatron office renovation in September 2006.

The uranium detected in 1993 in the Old Betatron shooting room is clearly not representative of the entire residual period or of an undisturbed decay of uranium. So to mathematically calculate an assumed dose for each year from 1953 to 1993 at GSI is completely absurd. It is unreasonable to assume *a priori*, without measured data to back it up, that radiation levels declined in a smooth arc, whatever type of curve fitting decay formula one chooses to use in the model. The model is flawed from the outset because accurate, comprehensive, real measured data for 1953 to 1993 from throughout the GSI building complex to validate and define and bound doses using the alternate uranium intake model is simply not available. The model is surrogate data based.

The statement starting on the fourth line from the bottom of page 3 of the SC&A alternate model report that ***"These random samples constitute the best available data for estimating the average contamination level on the floor of the shooting room of the Old Betatron Building,"*** may be true but is also is a bit misleading and disingenuous because (a) these are the only such data, and (b) they were taken 40 years after the start of the covered period and 20 years after the start of the residual contamination period. Uranium dust can and often does settle on building rafters as well as on the floor (see Dow Madison SEC-00079 petition Board deliberations for more discussion of this point). The GSI Old and New Betatron rafters were not surveyed for uranium dust radiation during the cleanup in 1993. Why this was *not done* is hard to understand.

Refer to Figure 1 on the following page and to Table 2 on the next page after that. Both are part of section 2.1.

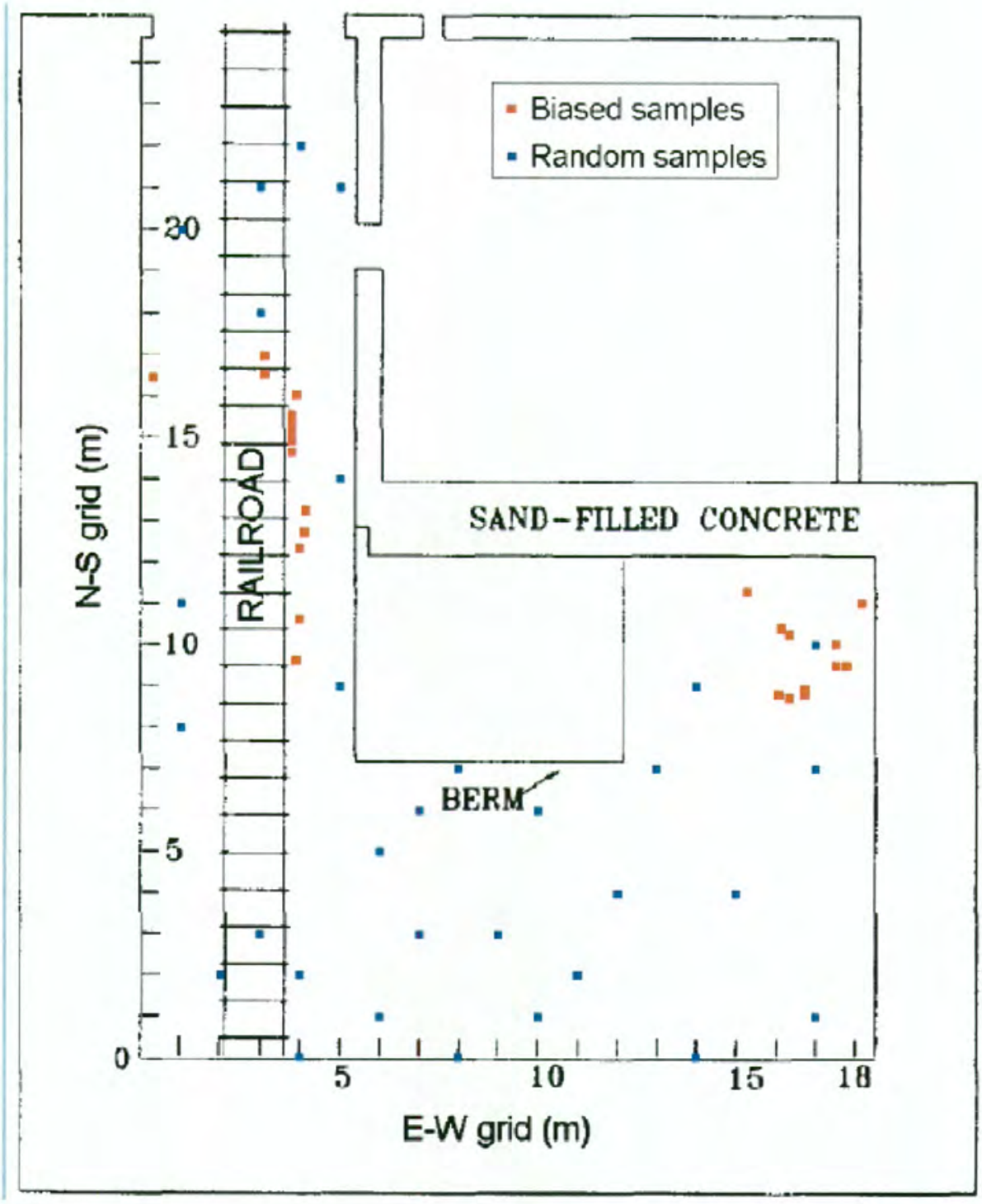

Figure 1. Locations of α-Activity Measurements in Old Betatron Building

Page 5 (see Table 2. next page)

Table 2. Alpha Activity Concentrations on Floor of Old Betatron Building

Sample location		Alpha	
North	East	dpm/100 cm^2	Bq/m^{2a}
0	4	<MDA	42
0	8	<MDA	42
0	14	<MDA	42
1	6	<MDA	42
1	10	<MDA	42
1	17	<MDA	42
2	2	<MDA	42
2	4	<MDA	42
2	11	21	35
3	3	<MDA	42
3	7	35	58
3	9	<MDA	42
4	12	<MDA	42
4	15	<MDA	42
5	6	<MDA	42
6	7	<MDA	42
6	10	<MDA	42
7	8	<MDA	42
7	13	35	58
7	17	<MDA	42
8	1	<MDA	42
9	5	<MDA	42
9	14	<MDA	42
10	17	42	70
11	1	<MDA	42
14	5	28	47

18	3	<MDA	42
20	1	<MDA	42
21	3	<MDA	42
21	5	<MDA	42
22	4	<MDA	42
Average			43.6

Source: Murray and Brown (1994, Table 4)

[a] **Calculated assuming "<MDA" = 25 dpm/100 cm^2**

Since t_f is after the end of uranium-handling operations, we can solve for R using the second and third lines of equation 2. Substituting t_f for t, we obtain

R = rate of accumulation of surficial uranium during uranium handling operations = 1,195 Bq m^{-2} d^{-1}

$S(t_f)$ = average a-activity concentration on first floor of Old Betatron Building at time t_f = 43.6 Bq/m^2

t_f = time of ORNL survey = 14,767 d (January 1, 1953–June 7, 1993)

The average surficial activity concentration during a given calendar year can be estimated by calculating $S(t)$ on June 30, the midpoint of the year. The results are listed in Table 3. As shown in this table, the surficial concentration increases markedly from 1953 to 1958, then gradually levels off and starts to decline after 1962. To determine the accuracy of using the midyear date, we explicitly calculated the average concentrations during the first 5 years by integrating the first line of equation 2 over each year. We found that the results of this exact calculation agree with the concentration on June 30, with a maximum difference of 0.6% during the first year and less than 0.2% in the following 4 years. This indicates that using the midpoint of the year results in an accurate determination.

2.2 Airborne Uranium Activity Concentration

The airborne uranium activity concentration due to surficial contamination is calculated by applying a resuspension factor to the surficial concentration.

$$\chi_S(t) = F_r\, S(t) \qquad (4)$$

$\chi_S(t)$ = airborne uranium activity concentration due to surficial contamination at time t

F_r = resuspension factor
= 1×10^{-5} m^{-1}

The airborne uranium activity concentration due to uranium handling operations can be estimated from R, the rate of accumulation.

$$\chi_h = \frac{R}{c_1 v_d} \qquad (5)$$

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MCKEEL COMMENT 1 **on section 2.2 Airborne Uranium Activity Concentration.**
Table 3 and formulas (4) and (5) support the proposition that "*The airborne uranium activity concentration due to surficial contamination is calculated by applying a resuspension factor to the surficial concentration.*" And "*The airborne uranium activity concentration due to uranium handling operations can be estimated from R, the rate of accumulation.*" Specific numbers are given to plug into these formulae for the following parameters:
• _h = airborne uranium activity concentration due to uranium handling activities
• c1 = conversion factor
• vd = deposition velocity of 5 um (micrometer symbol) AMAD particles
The source data for the first two of these values is not given. (Allen and Glover 2007) is given as the source of the vd variable.

MCKEEL COMMENT 2 **on section 2.2 Airborne Uranium Activity Concentration**: The preceding formula and the data in Table 3 below are due to surrogate, that is derived rather than real or measured, data and hence is not acceptable for calculating uranium intakes at GSI based on SC&A's own recommendation that NIOSH develop an intake model that does not depend on surrogate data. The SC&A basic assumptions are rife with uncertainty and incompleteness. The formulae may be correct but, as SC&A admits later in this paper, there are many processes and factors that enter into airborne uranium. The key point is, GSI has no (zero) real measured ambient air, general air, or breathing zone or urine uranium bioassay data to define and accurately and plausibly bound the true level of airborne uranium at any time or location within GSI for the full forty year time period between 1953 and 1993. The phrase "full of sound and fury, signifying nothing" (that's real or good in science) comes to mind with respect to this SC&A model.

Table 3. Inhalation of Uranium by GSI Workers

Year	U concentration			Intake (dpm/calendar day)		
	Bq/m^3[2a]	dpm/100 cm^3[2a]	dpm/m^3[3b]	Resuspension	U handling	Total
1953	10,119	6,071	6.07	64.87	1,591.28	1,656.15
1954	27,245	16,347	16.35	174.67	1,591.28	1,765.95
1955	40,657	24,394	24.39	260.65	1,591.28	1,851.93
1956	51,209	30,725	30.73	328.30	1,591.28	1,919.58
1957	59,402	35,641	35.64	380.82	1,591.28	1,972.10
1958	64,775	38,865	38.86	415.27	1,327.34	1,742.61
1959	65,559	39,336	39.34	420.30	1,229.22	1,649.52
1960	66,123	39,674	39.67	423.91	1,229.25	1,653.16
1961	66,682	40,009	40.01	427.49	1,410.92	1,838.41
1962	71,491	42,895	42.89	458.32	1,018.30	1,476.62
1963	61,489	36,893	36.89	394.20	276.89	671.09
1964	49,322	29,593	29.59	316.20	102.44	418.64
1965	39,887	23,932	23.93	255.72	74.30	330.02
1966	31,800	19,080	19.08	203.87	23.19	227.06
1967	24,902	14,941	14.94	159.64		159.64
1968	19,473	11,684	11.68	124.84		124.84
1969	15,259	9,155	9.16	97.82		97.82
1970	11,949	7,169	7.17	76.60		76.60
1971	9,356	5,614	5.61	59.98		59.98
1972	7,317	4,390	4.39	46.91		46.91
1973	5,733	3,440	3.44	36.76		36.76
1974	4,489	2,694	2.69	28.78		28.78
1975	3,516	2,109	2.11	22.54		22.54
1976	2,749	1,650	1.65	17.62		17.62
1977	2,154	1,293	1.29	13.81		13.81
1978	1,687	1,012	1.01	10.81		10.81
1979	1,321	793	0.79	8.47		8.47
1980	1,033	620	0.62	6.62		6.62
1981	809	486	0.49	5.19		5.19
1982	634	380	0.38	4.06		4.06
1983	496	298	0.30	3.18		3.18
1984	388	233	0.23	2.49		2.49
1985	304	182	0.18	1.95		1.95
1986	238	143	0.14	1.53		1.53
1987	186	112	0.11	1.20		1.20

1988	146	87	0.09	0.93	0.93
1989	114	69	0.07	0.73	0.73
1990	89	54	0.05	0.57	0.57
1991	70	42	0.04	0.45	0.45
1992	55	33	0.03	0.35	0.35
1993	46	28	0.03	0.29	0.29

[a] Surficial activity concentration

[b] Airborne activity due to resuspension from contaminated surface

[c] Intakes continued until July 10, 1993, the date remediation under FUSRAP was completed.

χ_h = airborne uranium activity concentration due to uranium handling activities
= 18.44 Bq/m^3
= 1,106 dpm/m^3

c_1 = conversion factor
= 86,400 s/d

v_d = deposition velocity of 5 µm AMAD particles
= 7.5×10^{-4} m/s (Allen and Glover 2007)

2.3 Resuspension Factor

We selected a value of $1 \cdot 10^{-5}$ m^{-1} for the resuspension factor from the range of values cited by Sharfi (2012). Anigstein and Mauro (2012) had suggested a value of $5 \cdot 10^{-5}$ m^{-1} as a plausible upper bound in the model described by Allen and Glover (2007). Use of such a value would have made the results of their model more claimant favorable. However, as we shall demonstrate, the present value is more appropriate for our proposed alternative model.

MCKEEL COMMENT: The above paragraph indicates that SC&A resuspension factor numbers change on a whim. Anigstein and Mauro (2012) had forcefully argued for the 5-fold higher number, but now develop a new alternate model *for use by NIOSH* that revises the number downwards to an admittedly less claimant favorable 5-fold lower number. How can anyone accept this as good defensible science? This type of flip-flop reasoning makes a mockery of that concept. There has been a huge amount of agonizing with tortuous unscientific reasoning, speculation really, about what resuspension factor should be used for OTIB-70. The answer is obvious. All the estimates are only guesses. Nothing can substitute for having real measured resuspension values as a meters/sec rate and as units of radioactivity/sec which would be even better; neither of these data is known for GSI. Thus, using contrived resuspension factors not based on real measured data is employing surrogate data. Note that Sharfi (2012), which SC&A has latched onto for reasons that escape me, gives a "range of resuspension factors." All of these numbers are made up, educated guesstimates. They are not real values that are science based.

Reviewing some of the resuspension factors cited by Sharfi (2012), we note that a factor of $1 \cdot 10^{-6}$ m^{-1} is appropriate for a decommissioned facility in which surfaces would have been cleaned or washed, and no fresh radioactive material would have accumulated (Abu-Eid et al. 2002, p 4). A

facility with fresh, recently deposited surficial contamination that is subject to pedestrian and vehicular traffic may have a factor of $5 \cdot 10^{-5}$ m^{-1} or higher. In the proposed model, the contamination includes both recently deposited activity and material that may have accumulated over the entire 13.5-y period of AEC operations, whereas Allen and Glover (2007) postulated an accumulation over a period of one year. We believe that the intermediate value of $1 \cdot 10^{-5}$ m^{-1} is a plausible upper bound for use with the proposed model.

MCKEEL COMMENT: Regarding the concluding sentence, I believe the "intermediate value" cited is a guess that is different from previous well reasoned pseudoscientific guesses and should not be accepted as a validated bounded value, which I contend is impossible to determine in the absence of real data. Again, SC&A is employing surrogate data without admitting they are doing so. The Board should reject this analysis.

The resuspension factor should also be in reasonable agreement with the fractional removal rate recommended by Sharfi (2012). Removal can involve various unspecified mechanisms; for the purpose of the present comparison, we will assume that some unknown fraction of the removal is through resuspension, with the resuspended material being vented to the outside air.

MCKEEL COMMENT: Terms like "in reasonable agreement" are not scientifically acceptable. What are the established limits for the pseudoscientific term "in reasonable agreement?" What is reasonable and who decides that? Is "reasonable" ± 1 standard deviation from some unknown and undefined mean value that does not actually exist? The Board should again reject this model based on this type of reasoning. In other GSI contexts, NIOSH and SC&A call agreement between models of 200% to 300% "reasonable agreement." This is another example of extreme fuzzy reasoning.

Note the text above admits that resuspension necessarily involves "various unspecified mechanisms" and "some unknown fraction of the removal" that is due to resuspension. These terms clearly place the mathematic formula that follows into question because the input data into the model is unknown and unknowable, and the limits of uncertainty (that must be enormous) are not defined by a formal uncertainty analysis. All of this modeling is pure speculation, not solid science and it should be rejected by the Board. This model should not be used by NIOSH in Appendix BB or for dose reconstructions.

The relationship among the removal rate, the resuspension factor, and the building ventilation rate can be expressed by the following equation:

μ_r = **removal rate due to resuspension (d^{-1})**
$\leq \mu$

c_2 = **conversion factor**
= **24 h/d**

r = **air exchange rate (h^{-1})**

V = **volume of affected region (m^3)**

A = **area of contaminated surface (m^2)**

This is a plausible value of the effective air exchange rate for the shooting room in the Old Betatron Building.

MCKEEL COMMENT: The statement "This is a plausible value..." is not substantiated at all. Thus, it is by definition not plausible because the reasoning is "surrogate" and is not a real measured value.

Although an often-quoted nominal value of the ventilation rate for an industrial building is about 1 h $^{-1}$, there are several factors that would have reduced the effective air exchange rate in this instance. First, we note that the ventilators (exhaust fans) were located on the roof.

MCKEEL COMMENT: GSI site experts and I have pointed out the Old and New Betatron buildings are physically different in many parameters that include construction materials, size, volume, wall height, shielding, and in the number of rooftop ventilators, one having two and the other three (evident form aerial photos).

Air entered the building primarily through the outside entrance. The entrance to the exposure room of the New Betatron Building was approximately 17 ft high, as scaled from the elevation drawing shown in Figure 2. The entrance to the Old Betatron Building (shown in Figure 3) appears to have had a similar height. Some of the air entering through the door would have been exhausted directly through the roof, without mixing with the air in the workers' breathing zone that is a few feet above the floor. Thus, the effective air exchange rate while the outside door was open would have been less than the exhaust rate. Furthermore, the room had no openings other than the outside door and the door to the control room. The outside door would normally have been opened only to permit the passage of castings to be radiographed and probably, in summer, to allow additional ventilation, but would be closed while radiography was in progress. The door to the control was always locked while betatron radiography was in progress, which was approximately 41% of the time (SC&A 2008).

MCKEEL COMMENT: This paragraph is replete with factual errors and is rife with pure speculations that cannot be substantiated by SC&A or any real measured data.

We challenge the statement that openings in the two facilities were the same in number and size and dimensions. Doors were added to the New Betatron building, for example.

SC&A knows nothing about the exhaust fan capabilities as to amount of air flow or removal rate or how they would affect the overall building air flow pattern. The walls of both facilities were made of several types of material which had joints that were porous to air and had gaps. Above the concrete walls was tin shielding. When we visited in 2006 parts of the tin roof was rusted through and had holes in it. Given all these potential ways that air could enter and escape, a statement that a few doors was the only air path is utterly ridiculous to anyone that has actually visited GSI. Many living Betatron employees and other GSI workers can and have attested to the truthfulness of the statements I am making here.

An exact statement that betatron radiography was in progress "approximately 41% of the time" is another pure guess; the statement is not substantiated by any actual workplace log books, shot records, NDT x-ray reports, NDT x-ray films, or anything but guesstimates derived from worker interviews and pseudoscientific speculation. SC&A and NIOSH staff were invited to visit the GSI facility several times by John Ramspott (this name should not be redacted). Mr. , a GSI site expert and Dan McKeel and members of SINEW visited the GSI site in September 2006 and took extensive photographs and videos of what we observed. SC&A and NIOSH could and should have availed themselves of the same opportunities. These repeated overtures by us were, however, always ignored. Making statements that appear to impart scientific exactitude when the uncertainties are completely undefined is not scientifically defensible and should be rejected as unconfirmed speculation by both the Board and by NIOSH, who again should not use this alternate model for calculating uranium intakes 1953-1993. NIOSH at this time has no validated intake method.

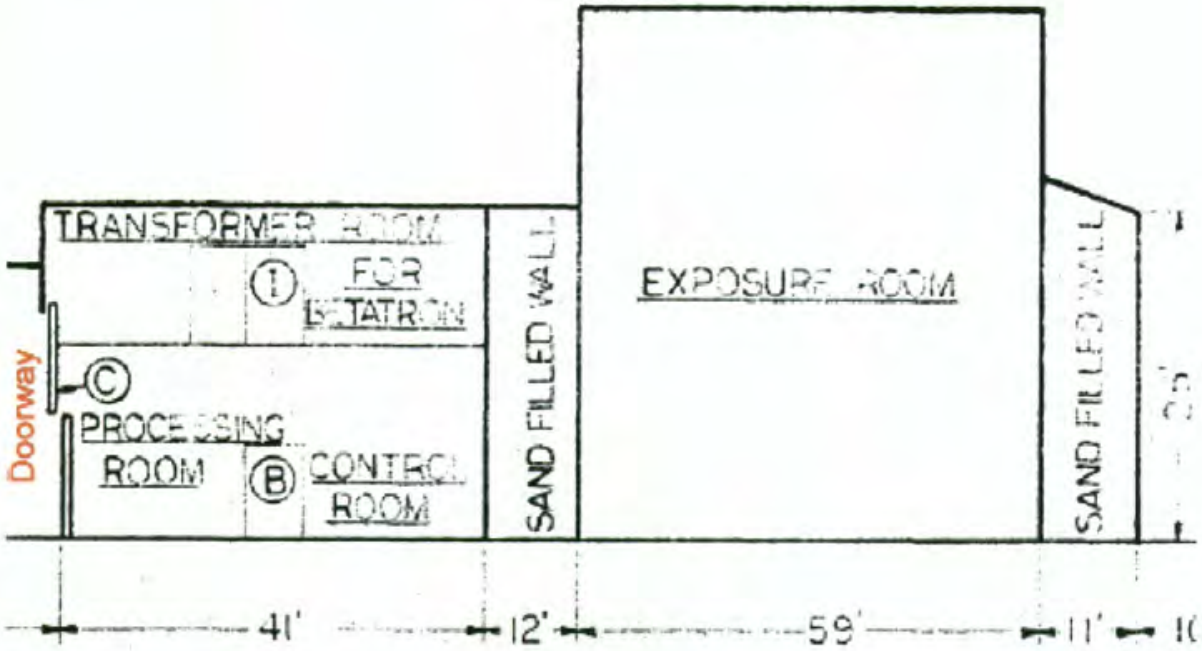

Figure 2. Elevation Drawing of New Betatron Building—Detail (NRC 2009)

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MCKEEL COMMENTS:

1. The New Betatron Building elevation drawing cannot be used to calculate a building dimensional model. Note the height of the control room is not shown. This is a side view sketch, not a blueprint and the doorway dimensions are not given. Nothing is to exact scale. One sand filled wall is said to be 11 ft. thick and the other 12 ft. thick, which makes no sense based on other drawings we have of the same structure. What one can see is the different height between the exposure room and the tunnel to the left is much larger for the New Betatron Building than it appears to be for the Old Betatron Building pictured below.

2. The photo view of the Old Betatron building that follows is dimensionless. The ground is obscured because of the angle of view prevent seeing the ground. Perspective distortion prevents the truck to be used as a measurement marker as the distance from truck to building is not known.

Figures 2 and 3 are thus entirely worthless for making any definitive statements about building volumes and dimensions. No one has made any serious attempts to obtain engineering drawings, including "as built" plans from the Army Corps of Engineers or from GSA, which sold the Old Betatron building and contents in 1974 as it was government owned.

Exact building dimensions are required to accurately model air flows or building air turnover rates as shown at both Blockson and Texas City Chemical plants that processed phosphate rock to extract uranium ore for the AEC. In the process radon gas was released. SC&A developed a radon model that NIOSH employed that was rejected by the full Board and led to approval of both SEC-58 for Blockson and SEC-88 for Texas City Chemicals based on the defective SC&A radon model.

Figure 3. Photo of Old Betatron Building ([redacted] 2007)

MCKEEL COMMENT: This photo was given to SC&A by GSI site expert Mr. [redacted] whose name will be redacted again here when this report is posted to Docket 140. This redaction represents a violation of the principle that copyright ownership should be attributed when someone such as SC&A uses a photo copyrighted by someone else. The redaction above destroys this attempt at proper copyright attribution, which is "John Ramspott © 2006." The 2007 date is not correct. The SINEW team site visited GSI in September 2006 when this photo was taken.

The purpose of this calculation is to bound the selected resuspension factor. In reality, there are means of removing the surficial activity other than by resuspension and subsequent exhaust. Thus, the removal rate due to resuspension, _$_r$, is most likely substantially less than _, which, according to equation 7, would imply a lower air exchange rate. A higher value of F_r would lead to a still smaller air exchange rate, one that would no longer be realistic. This calculation confirms that $F_r = 1 \_ 10^{-5}$ m constitutes a plausible upper bound.

MCKEEL COMMENT: Nothing about the foregoing analysis was plausible for reasons stated by me and confirmed in the first sentence above. SC&A acknowledges "there are means of removing the surficial activity other than by resuspension and subsequent exhaust." Of course there are. One is by vacuuming that was done daily at GSI using a bevy of industrial vacuums that were larger than the one DOE/ORNL assayed during the 1989-1993 survey and cleanup period. None of these larger GSI industrial vacuums were available to be examined or surveyed for radioactivity, ever.

2.4 Intakes of Uranium by Inhalation

We calculated the inhalation of uranium by GSI workers by assuming that they were exposed to the airborne concentration _s(*t*), evaluated for each calendar year, during each work shift, including the periods of uranium handling operations. We assumed that they were also exposed to the airborne concentration, _*h*. during the entire time of uranium handling operations, as listed in Table 1. The intakes are based on a breathing rate of 1.2 m^3/h; they are listed in Table 3 for each calendar year from the start of AEC operations until the time of the cleanup under FUSRAP.

MCKEEL COMMENT: There is no justification or source cited for the breathing rate used here. There is no analysis that recognizes that determination of the percent of workers who were nose and mouth breathers as has been assessed by some other work groups at other sites. There is no calculation of rafter uranium-bearing dust that became airborne during 1953 to 1993 throughout the entire GSI building complex. The SEC-00105 petition includes all workers at all building locations. This model can apply only to the Old Betatron Building, a tiny part of GSI.

3 Discussion of Model

Our alternative model utilizes all available GSI-specific data, and does not employ any measurements from other sites. The model assumes two sources of airborne uranium concentrations: disturbance of the uranium metal during handling operations and resuspension of uranium dust on the floor. Since these concentrations have two separate source terms, it is appropriate that the intakes should be additive.

The model does assume that the uranium oxide released during the uranium handling operation forms an aerosol with a particle size distribution equal to 5 um AMAD. Anigstein (2012) questioned that assumption as employed by Allen and Glover (2007), because the uranium oxide

could have included a wide range of particle sizes, including large particles that were not respirable and would not have been included in the measurements reported by Harris and Kingsley (1959) that were the basis of the uranium source term used by Allen and Glover. In the present analysis, however, that calculation is performed in reverse. The uranium source term (i.e., the deposition rate), is calculated from the site-specific surficial contamination levels. Since the derived concentration during uranium handling operations is inversely proportional to the deposition velocity, which increases with particle size, our assumption regarding the particle size distribution leads to a higher concentration and to a higher respirable fraction than would result from larger particles. Both of these are claimant-favorable results.

MCKEEL COMMENT: The true particle size distribution at GSI was not measured and is not known. The petitioners therefore state that SC&A is making use of surrogate data that has not been assessed as meeting Board criteria. The size settled upon is another not validated guesstimate that adds to this house of cards intake model. This model is not plausible as defined in any definite way or by any believable rationale. The values assigned for particle size are thus picked out of the universe of possible particle sizes based on assumptions that are not scientifically justified.

4 Results

One result of the analysis is an evaluation of the airborne uranium activity concentration due to uranium handling activities equal to 1,106 dpm/m^3. This value is approximately twice the breathing-zone activity concentration of 590 dpm/m^3 reported by Harris and Kingsley (1959) for the uranium slug-stamping operation. However, it is about 30% of the value of 3,926 dpm/m^3 presented by Anigstein (2012) that was derived from Adley (1952) for the operation "Unloading rods from truck with fork lift." On the one hand, the activity concentration derived for GSI is conservative in that it is based on the assumption that the deposition is entirely from 5 um AMAD particles, as discussed in section 3 of the present memo. However, it could increase by a factor of 2 if we were to assume, as did Allen and Glover (2007), that the uranium handling operations took place during only one-half of the hours authorized by the MCW POs, the remainder of the time being spent on radiographing the uranium metal. Since the higher concentration would be offset by a shorter exposure duration, such an assumption would not change the uranium intakes and resulting internal doses, but it would affect the comparison of the derived concentration with data from other sites.

MCKEEL COMMENT ON 4 RESULTS TO THIS POINT OF THE ANALYSIS: This text characterizes and defines three scientific studies that suggest airborne uranium activity concentration varies between 590 and 3,926 dpm/m^3. Selecting one of the three studies is essentially employing surrogate data. The selected value certainly does not represent use of actual measured GSI data. Another factor of 2 is introduced into this fuzzy math formulation. Again, there are too many unproved *assumptions* that attempt to bypass lack of real data. The model belongs to SC&A and not to NIOSH, which has not commented on this paper as of this writing.

Next, we compare the calculated uranium surficial activity concentrations with those used by Allen and Glover (2007). These authors derived a maximum value of 1,170 dpm/100 cm^2, which they assigned to all time periods following July 1, 1961. By contrast, we derived values ranging from 27 dpm/100 cm^2 during 1993, prior to the FUSRAP cleanup, to a high of about 43,000 dpm/100 cm^2 during 1962. Finally, we note that Allen and Glover listed intakes ranging from 0.932 dpm per calendar day during the entire residual period to about 128 dpm per calendar day in 1962. Our model results in intakes ranging from 0.29 dpm per calendar day at the end of the residual period to a high of 971 dpm per calendar day in 1957. For the entire 40.5 years from 1953 to mid 1993, Allen and Glover's average inhaled intake is about 29 dpm per calendar day, vs. an average of 261 dpm per calendar day calculated with our alternate model.

MCKEEL COMMENT ON 4 RESULTS: COMPARISON WITH ALLEN AND GLOVER 2007: The final sentence conclusion again illustrates how differently SC&A and the petitioners view the newly derived inhaled intake per day values by **NIOSH (29 dpm per calendar day)** and by **SC&A (261 dpm per calendar day)**, a dramatic ten-fold difference. The petitioners view this discrepancy as clear evidence that models based on assumptions and not on real data generate values that are so disparate as to totally lack scientific credibility. GSI merits an SEC.

5 Conclusion

We have presented an alternate model for the assessment of uranium intakes at GSI that does not employ surrogate data derived from measurements at other sites. The model produces results that are plausible and claimant favorable, and are in a form that is suitable for use by NIOSH in performing dose reconstructions.

MCKEEL COMMENT ON 5 CONCLUSION: The petitioners disagree with the conclusions. The model does use surrogate (derived or virtual) data liberally that is not real measured GSI site data. The last sentence shows that SC&A clearly had a goal to develop a model **"that is suitable for use by NIOSH in performing dose reconstructions."** We strongly disagree the alternate uranium intake model should be used for dose reconstruction by NIOSH because it is scientifically flawed in many aspects that we have identified in our comments throughout this paper. The petitioners also assert in the strongest way possible that developing this model "out front" is an obvious counteraction to NIOSH demonstrably not being able to develop a valid intake model after two tries over a 5+ year period dating back to the release of Appendix BB Rev 0 in June 2007. We believe that Dr. Ziemer and Mr. Katz in tasking this paper by SC&A off the record were attempting to support a work group recommendation to deny SEC-00105 on August 28, 2012. We sincerely hope that the work group and full Board reject this unwarranted maneuver that is tantamount to SC&A doing NIOSH's work.

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[redacted] 2007. <[redacted]> **"Fwd: Overhead door / Old Betatron" September 27, 2007, personal e-mail to John Mauro and Robert Anigstein, SC&A, Inc., and Larry J. Elliott, NIOSH, CC:** [redacted]

MCKEEL COMMENT ON REDACTION, LAST REFERENCE OF PAGE 12: This extensive redaction clearly has the effect of censoring the identity of the copyright holder to this photograph. That is, proper attribution was thwarted. The photograph was actually taken in September, 2006. That information should have been included in the citation and should not have been redacted. Documenting the pedigree and source of data is important. Copyright owner names should be stated.

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APPENDIX A

On the Tasking of This SC&A Discussion Paper for the TBD-6000 Work Group 8.28.12 Meeting

The October 12, 2010 TBD-6000 work group meeting:

At the October 12, 2010, TBD-6000 work group meeting, the relevant transcript records the following exchange:

SOURCE URL: http://www.cdc.gov/niosh/docket/archive/pdfs/NIOSH-194/0194-031211-McKeel_sub.pdf

Page 271 = document page numbered 13 (14 of 19 counter).

> *In response to a question from Dr. Robert Anigstein of SC&A about a report on air activation doses he is preparing, Dr. Ziemer says "Hold that in reserve so that there's not at least a perception that you're out front on this. Note that you're not out in front, but -- and I think that Ted's points are well made, but there is a perception that we need to be cognizant of what -- let NIOSH have a chance to see how they deal with air activation. Then you can easily say, "Yes. we agree with this or we disagree based on our analysis."*

Dan McKeel's comment is that Dr. Ziemer appears to be conflicted about being "out front," that is, for SC&A to be preparing a paper about a topic that NIOSH should address first before NIOSH has addressed the topic. This is the case with the present paper of concern.

An e-mail exchange between Dan McKeel and Ted Katz, ABRWH DFO and a CDC employee, on tasking the Anigstein *et al.* alternate method for calculating uranium intakes at GSI Discussion paper to be presented at the August 28, 2012, TBD-6000 work group meeting.

MCKEEL COMMENT ON MESSAGES IN THIS THREAD (in blue to follow):

From: "Katz, Ted (CDC/NIOSH/OD)" <tmk1@cdc.gov>
Subject: **RE: CORRECTED Alternative Model for Calc. of Uranium Intakes at GSI, reply**
Date: July 30, 2012 3:54:19 PM CDT
To: "DanMcKeel2@aol.com" <DanMcKeel2@aol.com, "Kinman, Josh (CDC/NIOSH/DCAS) <eky1@cdc.gov> Cc: (omitted, see complete message thread to follow)

Dear Dan:

SC&A was tasked with reviewing the DCAS approach to reconstructing radiation doses from uranium intakes, under the surrogate data review criteria of the Board. In the process of doing so, SC&A realized that, in its opinion, the surrogate data DCAS was relying on was unsuited and

unnecessary for reconstructing the intakes in question. SC&A duly notified Paul and I of its progress and proposed that it address the surrogate data questions first, and follow this by fully describing the approach it indicated it would be recommending (which relies solely on available GSI data and on existing DCAS methods). Paul and I had not seen the surrogate data review, which was still underway, but Paul decided SC&A should proceed accordingly because it might expedite the Work Group's efforts to conclude the GSI review, should the Work Group agree with the SC&A surrogate data review.

MCKEEL COMMENT AND ANALYSIS: SC&A, according to this narrative, suggested that it perform NIOSH work and show that it could develop an alternate uranium intake model for GSI. NIOSH had not proposed developing such a model and Dr. Ziemer and Mr. Katz were aware of this fact. Clearly there was interaction between the client, the work group, and the contractor, and this off the record conversation could have influenced both the surrogate data report wording, and the new SC&A model rationale and content. In fact, this conversation was alluded to in the first paragraph of the alternate model paper, which proves this point. Is this appropriate for a report that is supposed to be an independent assessment of NIOSH work?

I think this is all logical enough. We could have left the question of examining SC&A's recommendation, if it proves applicable, until the Work Group had judged the surrogate data review, but that would have cost time in coming to decisions on this SEC petition. Whether DCAS and the Work Group agree with the surrogate data review, whether DCAS and the Work Group agree with alternative approach, etc. are all undetermined at this point. But it is the prerogative of the Board to examine the feasibility question as fully as it deems necessary and sufficient.

MCKEEL COMMENT: The petitioners do not agree with Mr. Katz. The main point is missed that the Board and SC&A are supposed to be "evaluating" (using their preferred terminology) NIOSH science, and in this case, the NIOSH Glover and Allen 2007 method for bounding GSI uranium intakes during both the covered and residual periods was found not to meet Board surrogate data criteria. It is hard to see how the Board could not accept these conclusions, that the slug facility was not fully justified as a surrogate site to use for GSI operations. This finding was obvious to Dan McKeel and was commended upon by him as early as 2008. SC&A and the work group ignored this observation at the time until the subject again arose and gained traction at the March and June TBD-6000 work group meetings. The petitioners also challenge Mr. Katz's statement that "it is the prerogative of the Board to examine the feasibility question..." However, developing a new alternative intake method goes beyond the ordinary definition of "testing feasibility" in the petitioner's view. **There was no new NIOSH intake model to assess with respect to feasibility or to evaluate when this paper was conceived and written**.

Finally, you questioned the process of tasking SC&A. We task SC&A during Board meetings (and all subcomponents thereof) to the extent we are prepared to do so. However, there are many details and related needs that arise when the Board is not in session. There is no requirement for tasking to be done in session, let alone exclusively in session, nor would it be practical to operate that way. When the Board is not in session, tasking and related clarification of tasks are handled by the Chair of the Board or its subcomponent, as appropriate, and me, as

SC&A's contract officer representative. There is no vote but we typically report the tasking, if is significant, at the next meeting.

MCKEEL COMMENT: This answer ignores several of the specific questions that McKeel posed to Mr. Katz: (a) who besides Dr. Ziemer and Mr. Katz participated in any way in the SC&A tasking? (b) did Board Chair Dr. Melius know about and approve of the SC&A tasking? Our strongest challenge is to Mr. Katz's statement that "*When the Board is not in session, tasking and related clarification of tasks are handled by the Chair of the Board or its subcomponent, as appropriate, and me, as SC&A's contract officer representative.*" Mr. Katz refers to "we" as though the Board and DFO were one and the same. The petitioners are not aware that the DFO, who is a CDC employee where CDC is an allied agency of NIOSH, is authorized to task SC&A. This seems to be the role of the ABRWH appointed by the President. I am not aware that the DFO is a Board member. Could Mr. Katz please cite for me the specific language in the SC&A contract that gives the DFO to act as the representative for the contract officer with authority to task SC&A? Can he point me to the specific document and page where this authorization is written? It seems to me this is a clear conflict of interest. I believe the Board and SC&A, which do derive their operating budgets and administrative support from HHS, should nevertheless be independent when it comes to making scientific decisions. This tasking, in my opinion, should reside solely in the hands of the Board itself and not be a function of the DFO or the contract officer, who is conflicted in the same sense as the DFO. The tasking ideally should be open and transparent to the full Board as was the SC&A 7.16.12 analysis of the surrogate data issue at GSI. Dr. Ziemer did the tasking during the June 19-21, 2012, ABRWH 84th meeting, and the full Board voted unanimously to support it. The tasking of this alternate method was done off the record, and apparently only two people and one Board member knew about the second tasking.

The Board member who brought forward both motions to have SC&A review surrogate data use at GSI with respect to the slug facility was apparently not informed about this second SC&A tasking to create an alternate uranium intake model for GSI.

Sincerely, --Ted

(The entire message thread follows)

Subj:	**RE: CORRECTED Alternative Model for Calc. of Uranium Intakes at GSI, reply**
Date:	Monday, July 30, 2012 3:54:38 PM
From:	tmk1@cdc.gov
To:	DanMcKeel2@aol.com, eky1@cdc.gov
cc:	patriciajeske27@gmail.com, jwramspott@sbcglobal.net, paz7@cdc.gov, pl.ziemer@comcast.net, low0@cdc.gov, melius@nysliuna.org

Dear Dan:

SC&A was tasked with reviewing the DCAS approach to reconstructing radiation doses from uranium intakes, under the surrogate data review criteria of the Board. In the process of doing so, SC&A realized that, in its opinion, the surrogate data DCAS was relying on was unsuited and unnecessary for reconstructing the intakes in question. SC&A duly notified Paul and I of its progress and proposed that it address the surrogate data questions first, and follow this by fully describing the approach it indicated it would be recommending (which relies solely on available GSI data and on existing DCAS methods). Paul and I had not seen the surrogate data review, which was still underway, but Paul decided SC&A should proceed accordingly because it might expedite the Work Group's efforts to conclude the GSI review, should the Work Group agree with the SC&A surrogate data review.

I think this is all logical enough. We could have left the question of examining SC&A's recommendation, if it proves applicable, until the Work Group had judged the surrogate data review, but that would have cost time in coming to decisions on this SEC petition. Whether DCAS and the Work Group agree with the surrogate data review, whether DCAS and the Work Group agree with alternative approach, etc. are all undetermined at this point. But it is the prerogative of the Board to examine the feasibility question as fully as it deems necessary and sufficient.

Finally, you questioned the process of tasking SC&A. We task SC&A during Board meetings (and all subcomponents thereof) to the extent we are prepared to do so. However, there are many details and related needs that arise when the Board is not in session. There is no requirement for tasking to be done in session, let alone exclusively in session, nor would it be practical to operate that way. When the Board is not in session, tasking and related clarification of tasks are handled by the Chair of the Board or its subcomponent, as appropriate, and me, as SC&A's contract officer representative. There is no vote but we typically report the tasking, if is significant, at the next meeting.

Sincerely, --Ted

From: DanMcKeel2@aol.com [mailto:DanMcKeel2@aol.com]
Sent: Friday, July 27, 2012 6:40 AM
To: Katz, Ted (CDC/NIOSH/OD); Kinman, Josh (CDC/NIOSH/DCAS)
Cc: DanMcKeel2@aol.com; [redacted], Ziemer, Paul (CDC/NIOSH/OD); pl.ziemer@comcast.net; Wade, Lewis (CDC/NIOSH/OD) (CTR); melius@nysliuna.org
Subject: Re: CORRECTED Alternative Model for Calc. of Uranium Intakes at GSI, reply

Dear Mr. Katz,

Please confirm that my interpretation about what you say is correct. That is, that Dr. Ziemer, off the record and separately from his Board approved tasking during the ABRWH June 2012 meeting, which did not mention any alternative method to be produced by SC&A, tasked SC&A to produce an alternative method for calculating GSI uranium intakes. If that is so, I would say that Dr. Ziemer tasked SC&A to perform contract work that should have been done by NIOSH/DCAS.

Your statement that "*SC&A produced this analysis in support of its review recommendation that NIOSH not use surrogate data for reconstructing uranium internal intakes*" does not seem valid or logical to me. Why should an SC&A finding that NIOSH's use of TBD-6000 slug facility intake data failed to meet any of 5 Board SD criteria logically require SC&A to produce an alternative method?

Rather, those dramatic findings should persuade the Board that NIOSH is unable to bound GSI intake doses with sufficient accuracy for Appendix BB and SEC-00105. It is really not relevant that SC&A can do so.

Is it now perceived that bounding doses at GSI with sufficient accuracy under SEC-00105 and Appendix BB has switched from being a primary *NIOSH task* to a primary SC&A task? Is that your view and that of the Board? If so, I strongly disagree.

TED KATZ: Please distribute this e-mail to all members of the TBD-6000 work group and staff and to all members of the full Board. Thank you in advance.

My additional questions:

1. Is it Dr. Ziemer and SC&A's position that the ultimate utility of the alternative SC&A method for calculating uranium intakes at GSI could be the alternative model can be adopted by NIOSH to bypass the 7.16.12 SC&A findings that the current NIOSH method for calculating intakes fails to pass any of the Board's five SD criteria? In other words, does this new paper offer NIOSH a way to do an end around the SC&A findings without NIOSH having to do any work? That would be improper in my view.

2. Is it still your position that Dr. Ziemer tasking SC&A to develop an alternate uranium intake method, another new (aka alternate) model not based on sufficient real measured data at GSI, is justified by SC&A's assigned and contracted "evaluative" role to monitor the quality of NIOSH science?

If so, I would feel more comfortable hearing this response directly from Dr. Ziemer directly rather than trying to obtain the tasking correspondence via FOIA/FACA.

The interpretation that SC&A is merely performing an assigned, valid federal contract "evaluation" function strains my sense of (a) the definition of the word "evaluate", and (b) it runs counter to my view of SC&A's proper role as the "Board's technical advisor" or contractor. It seems as though SC&A is acting as NIOSH's technical advisor and partner in producing the alternate method paper.

Question: Please clarify for me why this separate SC&A tasking was done off the record in a non-transparent way?

3. Who else besides Dr. Ziemer approved the SC&A tasking of the "alternate" method paper? More specifically:

(a) Did tasking of SC&A by Dr. Ziemer to produce this "Alternative method" Discussion paper have the prior concurrence of any or all members of the full Board and the TBD-6000 work group?

(b) Was there an accompanying off-the-record vote? If so, was the result recorded?

(c) Was this off-the-record tasking of SC&A action to produce the alternative uranium intake method known and approved by the Board chairman, Dr. James Melius?

Thank you.

Sincerely -- Dan McKeel 7.27.12 Friday

In a message dated 7/26/12 11:16:19 AM, tmk1@cdc.gov writes:

Hi again, Dan. DCAS has not produced a new method or otherwise responded to the SC&A review of the surrogate data use for dose reconstructions at GSI. At Dr. Ziemer's direction, SC&A produced this analysis in support of its review recommendation that NIOSH not use surrogate data for

reconstructing uranium internal intakes. --Ted

From: DanMcKeel2@aol.com [mailto:DanMcKeel2@aol.com]
Sent: Thursday, July 26, 2012 11:21 AM
To: Kinman, Josh (CDC/NIOSH/DCAS)
Cc: DanMcKeel2@aol.com; Katz, Ted (CDC/NIOSH/OD); Ziemer, Paul (CDC/NIOSH/OD); pl.ziemer@comcast.net; Wade, Lewis (CDC/NIOSH/OD) (CTR); melius@nysliuna.org
Subject: Re: CORRECTED Alternative Model for Calc. of Uranium Intakes at GSI, reply

Dear Mr. Kinman,

I did not receive an earlier corrected or uncorrected copy of the above paper today (July 26). I note that you replied to an earlier message of mine (weeks ago) that Mr. Allen told you "he didn't know" whether NIOSH would reply to SC&A and the Anigstein paper that was released on 7/16/12. I submitted my reply to that paper earlier today to Ted Katz and to the NIOSH Docket 140 (GSI) office BEFORE I received this new Allen method paper from you. I asked Ted to please circulate my transmittal letter to all TBD-6000 work group members and staff, and to the full ABRWH membership.

It is very concerning that I and you, possibly, were not informed by Mr. Allen and NIOSH that this new method was in the works. As I said in my critique sent this morning, I do not believe it is reasonable for the TBD-6000 work group or the full Board to entertain a THIRD attempt by NIOSH at bounding intake doses at GSI. Whatever new effort that went into this new paper, which I have not yet had time to read, could (and definitely should) have been expended during the 19 months that have elapsed since October 2010 when Mr. Allen issued his "Path Forward for GSI" white paper. NIOSH should have assured their methods met surrogate data criteria long ago. NIOSH to this day has never applied its OCAS-IG-004 surrogate data criteria to the GSI site dosimetry data. It is always playing catch up, and the time for the Board to call a halt in my view is now. Allowing NIOSH unlimited latitude in constructing new methods to replace scientifically unacceptable prior methods at the GSI, which has happened repeatedly, constitutes highly claimant adverse decision making.

Sincerely -- Dan McKeel 7.26.12 Thursday

In a message dated 7/26/12 8:56:09 AM, eky1@cdc.gov writes:

Good morning,

Attached is a PA-cleared, 508-compliant version of the corrected memo provided to you earlier today, *Alternative Model for the Calculation of Uranium Intakes at GSI.* There are some minor redactions in this cleared version.

Should you have any difficulties accessing this file, please contact me.

Sincerely,

Josh Kinman

SEC Petition Counselor
DCAS/NIOSH
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