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RANCH HAND MORBIDITY REPORT

1. The Air Force study of the health status of individuals exposed to Herbicide Orange and Dioxin during the Ranch Hand Operation in Vietnam was released on 24 February 1984. Over 1,000 Ranch Hand members completed the questionnaires and physical examination. Their results were compared with a carefully selected group of individuals who also served in Southeast Asia but were not exposed to Herbicide Orange or Dioxin. Copies of the press release and executive summary of the report are attached.

2. Important findings of interest include the following:

a. Conditions which have been attributed to exposure.

No cases of soft tissue sarcoma (a form of cancer), porphyria cutanea tarda (a liver disorder), or chloracne (a skin condition) were found in any Ranch Hand. Various investigators have previously reported herbicide or dioxin exposure caused these specific conditions.

b. Cancer

There was no difference in occurrence of systemic cancer. Some types of systemic cancer were found only in comparison subjects. (See Attachment 1.) Skin cancer, of the type that can be completely cured by simple excision (basal cell carcinoma), was seen more frequently in Ranch Handers. However, it was not possible to determine sun exposure history in either group. Sun exposure is recognized as a leading cause of such cancers. Necessary data on sun exposure will be obtained at the scheduled follow-up examinations.

c. Fertility/Infertility

There were no differences in fertility/infertility indices, miscarriages, stillbirths, live birth rates, sperm amount and type, frequency

Copy of Reports Provided to Committee  
Classification of Results  
Attached only Press Release.

## DRAFT

of severe birth defects (life threatening), or moderate birth defects (require medical care for correction). There was an increase in rate of reported limited (minor) birth defects in the Ranch Hand group. As noted on attachment 2, these include a number of inconsequential skin conditions. If these frequently seen, clinically insignificant anomalies are excluded from the calculations, no statistically significant difference exists in limited birth defects. Neonatal deaths (deaths within 28 days after delivery) were reported more frequently in Ranch Handers. As noted in attachment 3, this difference may be due to marked underreporting of deaths in this category post SEA in the comparison subjects. Verification of the reported conditions by medical record and birth/death certificate review is underway.

### d. Liver

No difference in frequency of liver disease was detected by laboratory testing or physical examination. The majority of laboratory tests were similar in the two groups. There were some minor differences in means of a few laboratory tests but, as noted in Attachment 4, these values were still well within normal limits and the differences were slight. There was no difference in the past occurrence of hepatitis, jaundice, or cirrhosis. There were more verified past liver abnormalities in the unspecified or miscellaneous category. As noted, no difference in the two groups (comparison and Ranch Handers) was found at the examination and the significance of the past miscellaneous liver conditions is uncertain.

### e. Cardiovascular

No differences were found in the frequency of abnormal electrocardiogram or abnormal blood pressure. Pulse intensity was decreased more

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frequently in two leg vessels in the Ranch Hand group. These determinations were made only by palpation, a relatively crude technique that can be affected by obesity, edema, and similar factors. Measurement by a more sophisticated technique allowing quantification (Doppler) will be accomplished at the next scheduled examination to determine whether this pulse difference actually exists or is due to artifact.

### f. Psychology

No difference was found in the objective psychological tests, e.g., IQ. Some differences of uncertain clinical significance were noted in subjective measurements, particularly in the high-school educated portion of the examinees.

3. We believe the study measured the true health status of both the Ranch Hand and comparison individuals to the extent medical science permits. The study repeatedly demonstrated the effects of classical risk factors (smoking, age, alcohol, etc.) to the same extent in both groups. Such demonstration of these effects reassures us that we would also have demonstrated a significant herbicide or contaminant exposure effect if it were present at this time. We consider the study reassuring in that no cases of conditions previously attributed to exposure were found, there was no increased incidence of major clinical health problems in Ranch Handers, and both the Ranch Handers and comparisons appeared in good general health for their age.

# MORBIDITY REPORT

## TYPE CANCER BY PERCENT

ATTACHMENT 1

	RH (1045)	ORIGINAL COMP (773)	TOTAL COMP (1194)
SKIN CANCER	3.3%	1.4%	2.1%
SYSTEMIC CANCER	1.2%	1.0%	0.9%
COLON	0.0%	0.3%	0.3%
PANCREAS	0.0%	0.1%	0.1%
GENITO-URINARY	0.6%	0.1%	0.3%
OROPHARYNGEAL	0.4%	0.3%	0.2%

# **RANCH HAND REPORTED LIMITED SKIN BIRTH DEFECTS**

BIRTHMARKS	5
SKIN DISCOLORATION	1
YELLOW COLOR, GONE IN ONE WEEK	1
SKIN TAGS	1
TWO NIPPLES ON BREAST	1

# NEONATAL DEATHS

(UNVERIFIED SELF REPORTS; MEDICAL RECORDS, DEATH CERTIFICATES PENDING)

RATE/1000

	RANCH HAND	COMPARISON
BEFORE RVN	13.4	16.0
AFTER RVN	16.8	3.4

ATTACHMENT 3

# MORBIDITY REPORT

## BLOOD TESTS

ATTACHMENT 4

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	MEAN VALUES		NORMAL RANGE
	RH	C	
LIVER			
SGOT	33.0	33.1	< 41
ALK PHOS	7.7	7.5	< 9.7
SGPT	20.3	20.5	< 45
GGTP	40.1*	39.3	< 85
LDH	142.1*	141.7	< 200
CHOL	212.2*	216.6	< 240

\*STATISTICALLY SIGNIFICANT DIFFERENCE