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Description Notes



**AIR FORCE HEALTH STUDY
(RANCH HAND II)**

UPDATE BRIEFING

29 SEPTEMBER 1986

BRIEFER: COLONEL WILLIAM H. WOLFE



STUDY DEVELOPMENT



1978-1979

PROPOSAL DEVELOPED

1979

PEER REVIEW AND REFINEMENT

1979-1982

STUDY POPULATIONS IDENTIFIED
QUESTIONNAIRES DEVELOPED

1982

PHYSICAL EXAMINATIONS ACCOMPLISHED

1983-PRESENT

MORTALITY REPORTS RELEASED

1984

BASELINE MORBIDITY REPORT RELEASED

1985

FIRST FOLLOWUP PHASE BEGUN



STUDY DESIGN



IDENTIFY EXPOSED POPULATION

IDENTIFY AND SELECT COMPARISON POPULATION

DETERMINE BASELINE HEALTH STATUS

MORTALITY

MORBIDITY

COMPARE FINDINGS STATISTICALLY TO DELINEATE

POSSIBLE HERBICIDE EFFECTS

ACCOMPLISH FOLLOWUP STUDIES OF POPULATIONS



MATCHING PROCESS



8 COMPARISONS SELECTED FOR EACH EXPOSED INDIVIDUAL
MATCHED FOR SEX, AGE, DUTY CODE, RACE

RANDOM COMPARISONS FROM EACH MATCHED SET USED

5:1 IN FIRST FOUR MORTALITY REPORTS

ALL COMPARISONS AFTER 1986

1:1 IN BASELINE AND SUBSEQUENT MORBIDITY REPORTS

OTHERS AVAILABLE FOR REPLACEMENT



SUMMARY OF MORTALITY RESULTS
(A/O 31 DEC 84)



EVALUATION OF 55 EXPOSED AND 285 COMPARISON DEATHS

RELATIVELY SMALL NUMBERS EMPHASIZE PRELIMINARY
NATURE OF THESE RESULTS

MORTALITY EXPERIENCE NEARLY IDENTICAL IN BOTH GROUPS

CAUSE-SPECIFIC ANALYSES NOT STATISTICALLY DIFFERENT



ADDITIONAL MORTALITY CONTRASTS



DOD RETIRED POPULATION

ALL RANK-EXPOSURE GROUPS DOING BETTER

EXPOSED-ENLISTED GROUP NOT STATISTICALLY BETTER

ACTIVE CIVIL SERVICE PERSONNEL

ALL SUBGROUPS EQUIVALENT TO CIVIL SERVICE

1978 U S WHITE MALES

ALL SUBGROUPS DOING SIGNIFICANTLY BETTER



SUMMARY COUNTS OF DEATHS

RANK	RANCH HAND				COMPARISON		
	AT RISK	DEAD	PERCENT		AT RISK	DEAD	PERCENT
OFFICERS	466	16	3.4		2278	98	4.3
ENLISTED	791	39	4.9		3893	187	4.8
OCCUPATION							
FLYING	646	24	3.7		3163	161	5.1
GROUND	611	31	5.1		3008	124	4.1
TOTAL	1257	55	4.4		6171	285	4.6



DEATHS BY CAUSE

	EXPOSED	COMPARISONS
ACCIDENTAL	19	96
SUICIDE/HOMICIDE	5	23
MALIGNANCY	6	51
CIRCULATORY	18	80
RESPIRATORY	0	7
DIGESTIVE	5	13
OTHER	2	15
TOTAL	55	285



BASELINE MORBIDITY RESULTS



NO DEFINITIVE CLINICAL ENDPOINTS CONCLUSIVELY
ATTRIBUTABLE TO HERBICIDE EXPOSURE

NO STS, PCT, OR CHLORACNE IN THE EXPOSED GROUP

SOME CLINICAL AND SUBCLINICAL DIFFERENCES OBSERVED
RELEVANCE OF SOME DEPENDENT ON ADDITIONAL
COVARIATE DATA

MOST VALUES WITHIN NORMAL RANGES

SCHEDULED FOLLOWUP EXAMINATIONS WILL PROVIDE DATA
NECESSARY TO DEFINE RELEVANCE



SIGNIFICANT GROUP DIFFERENCES



SELF-PERCEPTION OF HEALTH

SKIN CANCER

REPORTED BIRTH DEFECTS AND NEONATAL DEATHS

BABINSKI REFLEXES

SUBJECTIVE PSYCHOLOGICAL MEASURES

HEPATIC FUNCTION TESTS (GGTP, LDH, CHOLESTEROL)

PERIPHERAL PULSES

THYROID AND TESTOSTERONE



PHASE II EXAMINATIONS



PILOT EXAMINATIONS IN APRIL 85

10 EXAMINEES

INITIAL EXAMINATIONS BEGAN MAY 85

2 GROUPS PER WEEK

9 GROUPS LOST DUE TO HOLIDAYS

2309 PARTICIPANTS

COMPLETED MARCH 86



PROGRAM MODIFICATIONS FROM BASELINE



INTERVAL HISTORY (SUBJECT AND SPOUSE)

PHONE INTERVIEW WITH ENTIRE COMPARISON GROUP

BASELINE QUESTIONNAIRES TO NEW SUBJECTS AND SPOUSES

DELETIONS:

PULMONARY FUNCTION STUDIES

NERVE CONDUCTION STUDIES

SEMEN STUDIES

IQ TESTING



PROGRAM ENHANCEMENTS

SKIN CANCER EVALUATION

IMPROVED ALCOHOL AND SMOKING ASSESSMENT

COMBAT STRESS ASSESSMENT

BIRTH DEFECT SEVERITY ASSESSMENT

DOPPLER EXAMINATION OF PULSES

IMPROVED IMMUNOLOGIC ASSESSMENT

PORPHYRIN PROFILE BY HPLC



EXAMINATION QUALITY CONTROL



OBSERVATION BY MONITOR WITH CHECKLIST

MARK-SENSE EXAMINATION FORMS

MANUAL AND ADP QC REVIEWS

STRICT LABORATORY QC

TIGHT CV%

FIRCUSUM

NO PRIOR STANDARDS FOR

IMMUNOLOGY QC

PATIENT CRITIQUE FORMS

BLINDNESS OF EXAMINERS



DAILY SCHEDULE



0530	START 12-HOUR URINE COLLECTION
0630	DEPART FOR CLINIC
0700- 0800	INITIAL BLOOD DRAW
0800- 0900	SKIN TESTING
0800- 1500	EXAMINATION PSYCHOLOGICAL TESTING INTERVIEW
1730	TURN IN URINE COLLECTION



RESTRICTIONS

3 DAY CARBOHYDRATE LOADING DIET

3 DAY ABSTINENCE FROM ALCOHOL

NO ALCOHOL FOR 2 DAYS ONSITE

FASTING AFTER MIDNIGHT

NO CAFFIENE OR NICOTINE AFTER MIDNIGHT

RESTRICTED UNTIL AFTER ECG AND DOPPLER



PARTICIPATION



	RANCH HANDERS	ORIGINALS	REPLACEMENTS
PARTIAL	39	62	32
REFUSAL	6	9	9
NEW	-	3	39
GAINS	45	74	80
LOSSES	74	64	21
RETURNEES	971	872	267
PHASE II TOTAL	1016	946	347
BASELINE TOTAL	1045	936	288



IMMUNOLOGY STUDIES



RANDOM SELECTION OF 1082 PARTICIPANTS (47%)

B AND T CELL STUDIES PERFORMED

SKIN TESTS TO 1768 (77%)

541 DELETED TO AVOID CONFOUNDING



SPOUSE QUESTIONNAIRES

INTERVAL HISTORY

1915 COMPLETED

979 ONSITE

936 MAIL/PHONE

BASELINE GIVEN TO 74

FERTILITY REVIEW

CONTACTED 2108 SPOUSES

1613 RESPONDED (76.5%)



TELEPHONE QUESTIONNAIRES



TOTAL SUBJECTS	7,963
INTERVIEWS COMPLETE	7,411 (93.1%)
REFUSALS	335 (4.2%)
UNLOCATABLES	190 (2.4%)
DECEASED	26 (0.3%)



THIRD PHYSICAL EXAMINATION

SCRIPPS CLINIC

LA JOLLA, CA

MAY 1987



ANTICIPATED EXAMINATION ADDITIONS



COMPLIANCE ENHANCEMENT

TONOMETRY

VISUAL ACUITY

AUDIOGRAMS

STOOL FOR OCCULT BLOOD

(PROCTOSCOPIC FOLLOWUP)

MEDICAL CONTACT CARDS



ANTICIPATED EXAMINATION ADDITIONS



SCIENTIFIC ISSUES

PULMONARY FUNCTION STUDIES

SCLR-90 PSYCHOLOGICAL BATTERY

MILLON CLINICAL SCALE

AUTOMATED BLOOD PRESSURE MONITOR

PROTEIN PROFILE

PHENOTYPE MARKER FOR ACTIVATED T CELLS

OPTIMIZE NATURAL KILLER CELL ASSAY

WITH INTERLUKIN-2



ANTICIPATED EXAMINATION DELETIONS

MMP I

CORNELL INDEX

HALSTEAD-REITAN

TIMED URINE COLLECTION

PORPHYRIN PROFILES

CORTISOL DETERMINATIONS

POKEWEED ANTIGEN

FROZEN MLC POOL

PERIPHERAL DOPPLER



ADDITIONAL CONSIDERATIONS



CARDIAC STRESS TESTING

PERSONALLY FUNDED IF DESIRED

D-GLUCARIC ACID ASSAY OF BANKED URINE SPECIMENS

SERUM DIOXIN ASSAY OF SUBSET OF EXPOSED GROUP



MILESTONES

JUNE 1986

ANALYSIS BEGUN

FALL 1986

1986 MORTALITY UPDATE

MAY 1987

THIRD EXAMINATION TO BEGIN

FALL 1987

RELEASE OF SECOND MORBIDITY REPORT

FALL 1987

1987 MORTALITY REPORT

FALL 1989

RELEASE OF THIRD MORBIDITY REPORT