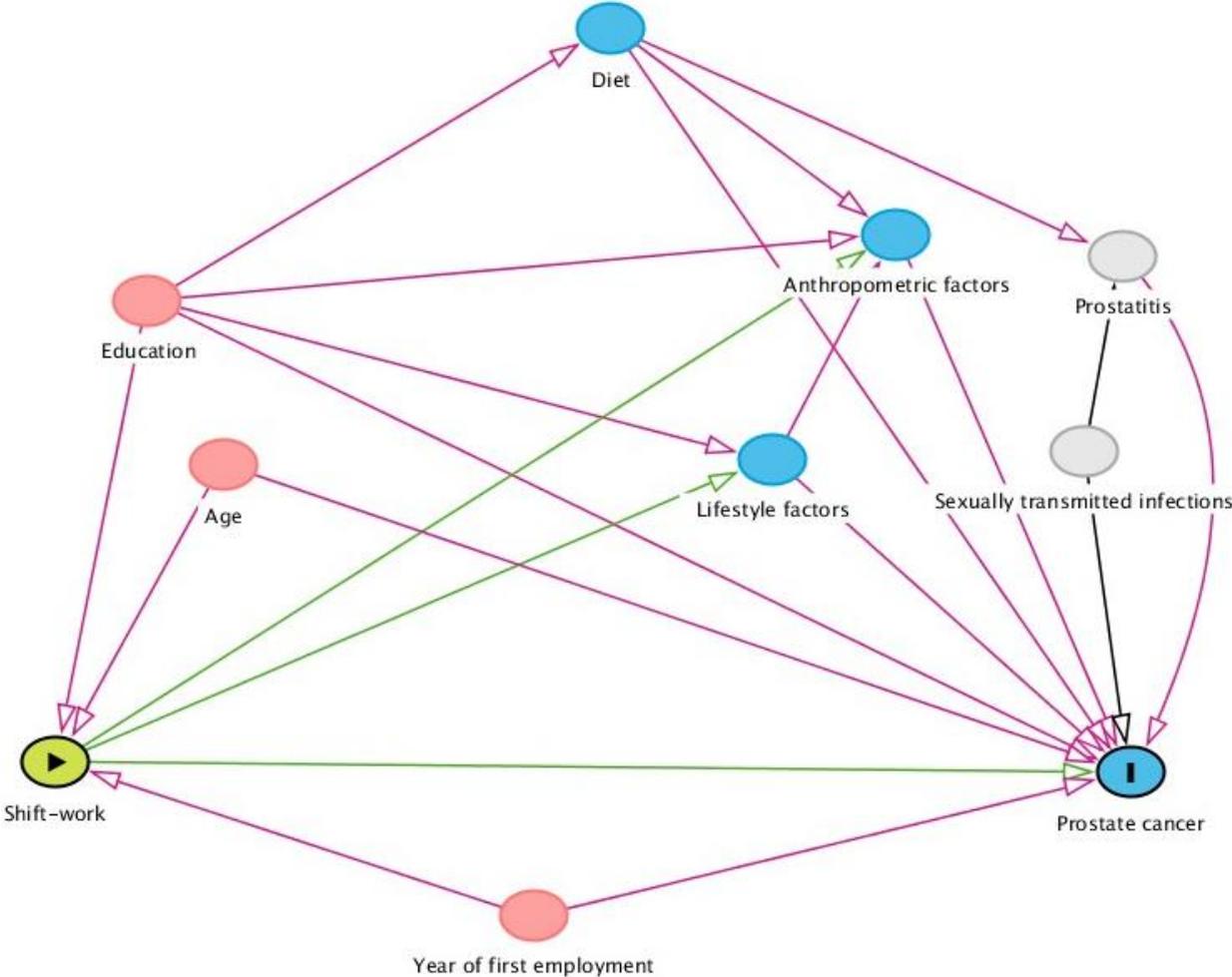
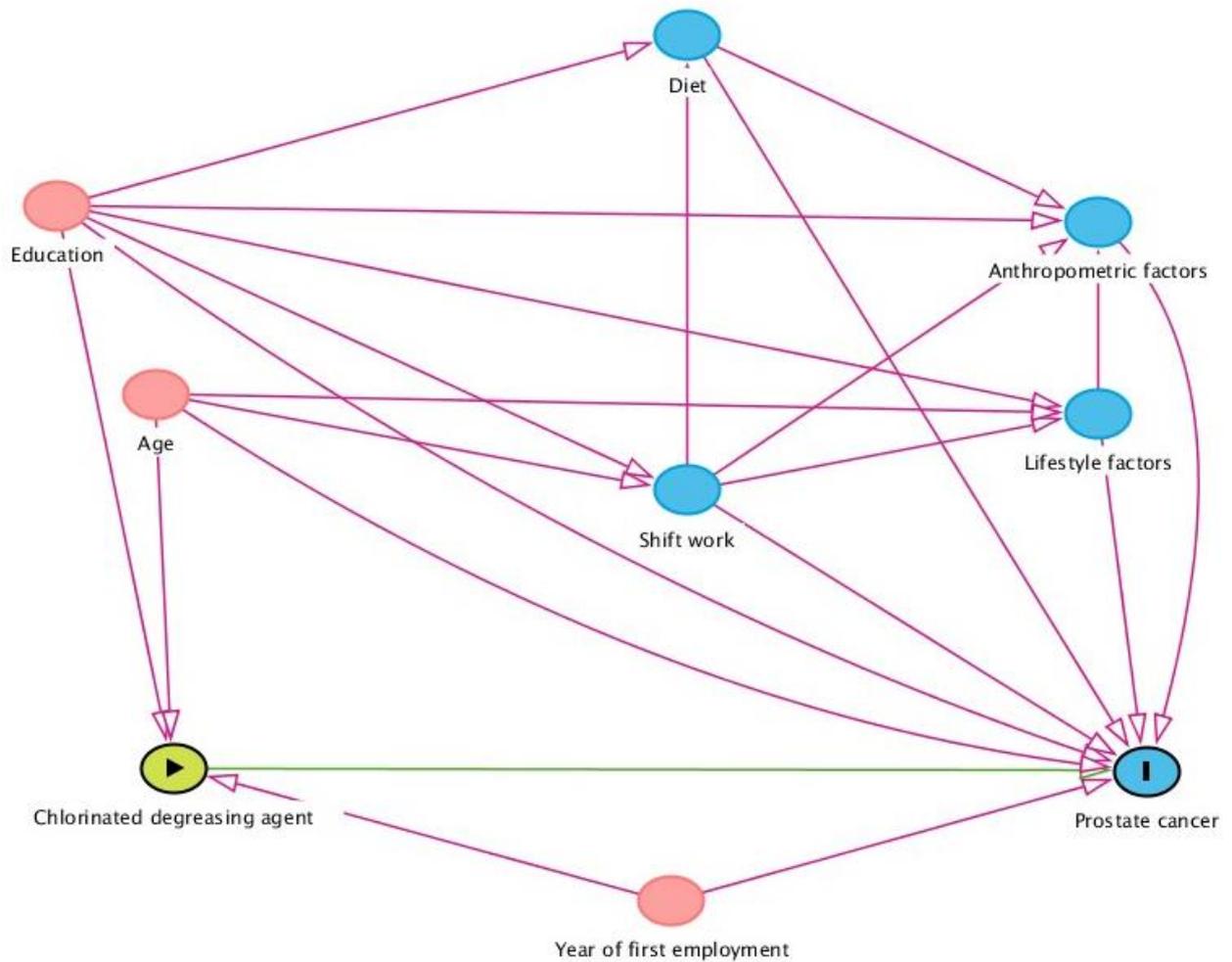


Supplementary material



Supplementary Figure S1.

Directed acyclic graph of the relationship between night shift work among offshore petroleum workers and aggressive prostate cancer risk. Produced by the DAGitty v.3.0 software. The yellow circle is the exposure (night shift work), the blue circle with the I is the outcome (aggressive prostate cancer), the red circles are ancestors of both the exposure and outcome (i.e. confounders included in the models), the blue circles are ancestors of the outcome (and hence not included in the model), and the grey circles are unobserved (latent) variables.



Supplementary Figure S2.

Directed acyclic graph of the relationship between exposure to chlorinated degreasing agents among offshore petroleum workers and aggressive prostate cancer risk. Produced by the DAGitty v.3.0 software. The yellow circle is the exposure (chlorinated degreasing agents), the blue circle with the I is the outcome (aggressive prostate cancer), the red circles are ancestors of both the exposure and outcome (i.e. confounders included in the models), while the blue circles are ancestors of the outcome (and hence not included in the model).

Supplementary Table S1. Characteristics of the study sample (n=2355) in the Norwegian Offshore Petroleum Workers Cohort, stratified by work schedule.

	Work schedule									
	Day shifts only		Rollover shifts only		Night shifts only		Mixed shift work only		Completely missing work schedule	
Characteristics ^a	n=969		n=857		n=37		n=373		n=119	
	n	%	n	%	n	%	n	%	n	%
Case										
Yes	112	11.6	112	13.1	5	13.5	53	14.2	17	14.3
No	857	88.4	745	86.9	32	86.5	320	85.8	102	85.7
Age in 1998										
Median (range)	54 (21-79)		54 (23-78)		53 (20-73)		52 (31-73)		58 (34-80)	
15-24	<5	NA	<5	NA	<5	NA	0	0	0	0
25-34	16	1.7	31	3.6	<5	NA	<5	NA	<5	NA
35-44	130	13.4	106	12.4	5	13.5	68	18.2	6	5.0
45-54	386	39.8	304	35.5	16	43.3	167	44.8	35	29.4
55-64	315	32.5	285	33.3	8	21.6	110	29.5	41	34.5
65-74	112	11.6	122	14.2	5	13.5	24	6.4	31	26.1
75-84	<25	NA	<25	NA	0	0	<5	NA	<5	NA
Education										
Compulsory	129	13.3	152	17.7	<25	NA	58	15.6	25	21.0
Vocational	442	45.6	471	54.9	17	46.0	197	52.8	63	52.9
Upper secondary	140	14.5	118	13.8	8	21.6	49	13.1	14	11.8
University/college	254	26.2	106	12.4	<5	NA	67	18.0	13	10.9
Missing	4	0.4	10	1.2	<5	NA	2	0.5	4	3.4
BMI (kg/m²) n (%), median (range)^{a, b}	25.5 (18.0–60.8)		25.6 (17.5–36.8)		26.0 (13.7–42.0)		25.7 (18.4–43.3)		25.2 (19.0–34.0)	
BMI <25	403	41.6	346	40.4	14	37.8	139	37.3	50	42.0
BMI ≥25	546	56.3	500	58.3	23	62.2	233	62.5	60	50.4
Missing	20	2.1	11	1.3	0	0	1	0.2	9	7.6
Year of first employment										
1967-1979	429	44.3	470	54.8	16	43.2	240	64.3	74	62.2
1980-1989	419	43.2	308	36.0	15	40.6	117	31.4	35	29.4
1990-1999	121	12.5	79	9.2	6	16.2	16	4.3	9	7.6
Missing	0	0	0	0	0	0	0	0	<5	NA
Main activity in last position										
Production and process	20	2.1	131	15.3	<5	NA	48	12.9	<5	NA
Drilling and well maintenance	16	1.7	139	16.2	<5	NA	47	12.6	<25	NA
Maintenance/inspection/deck construction	582	60.1	392	45.7	11	29.7	153	41.0	60	50.4
Catering/office/administration	177	18.2	63	7.4	17	46.0	65	17.4	22	18.5
Miscellaneous	166	17.1	121	14.1	5	13.5	58	15.6	24	20.2
Missing	8	0.8	11	1.3	<5	NA	2	0.5	5	4.2
Supervisor/manager										
Yes	481	49.6	306	35.7	10	27.0	238	63.8	50	42.0
No	475	49.0	537	62.7	27	73.0	134	35.9	58	48.8

Unknown	13	1.4	14	1.6	0	0	1	0.3	11	9.2
Type of company										
Operating	410	42.3	533	62.2	8	21.6	171	45.8	25	21.0
Contractor	527	54.4	290	33.8	25	67.6	192	51.5	68	57.1
Unknown	32	3.3	34	4.0	4	10.8	10	2.7	26	21.9
Type of installation										
Stationary	769	79.4	474	55.3	24	64.9	256	68.6	62	52.1
Movable	150	15.5	354	41.3	8	21.6	106	28.4	33	27.7
Unknown	50	5.1	29	3.4	5	13.5	11	3.0	24	20.2

^a All numbers up to five are listed as <5 due to European Union (EU) General Data Protection Regulations (GDPR), unless this only concerns missing. If only one cell per variable lists a number <5, the next smallest number is listed as <25, <50 or <100.

^b BMI, Body mass index

Supplementary Table S2: Hazard Ratios (HR) and 95% confidence intervals (95% CI) of aggressive prostate cancer by median of workers with exposure to chlorinated degreasing agents.

Duration (years) of chlorinated degreaser exposure ^{a,b}	No. cases/non-cases	HR (95% CI) ^d
0	49/320	1.00 (reference)
<Median	122/874	0.88 (0.60, 1.27)
≥Median	125/843	0.78 (0.53, 1.13)
<i>P</i> -trend ^e		0.201
Cumulative chlorinated degreaser exposure ^{a,b,c}		
0	49/320	1.00 (reference)
<Median	119/860	0.86 (0.59, 1.25)
≥Median	128/857	0.79 (0.55, 1.15)
<i>P</i> -trend ^e		0.300
^a Adjusted for year of first employment and education, and stratified by 10-year birth cohorts.		
^b Missing: Year of first employment (n=1), education (n=21).		
^c Cumulative exposure: Job-exposure matrix (JEM)-rating multiplied by duration (in years) for each employment period and summarised for each individual from the start of employment until 31 December 1998.		
^d Cox regression adapted to a case cohort design with age as the time scale.		
^e Modelled as a continuous variable to test for linear trend.		

Supplementary Table S3: Hazard Ratios (HR) and 95% confidence intervals (95% CI) of aggressive prostate cancer by work schedule category, showing only the mixed work category divided into mostly day work, mostly night shift work, and mostly rollover shift work.

	Work schedule exposure category ^{a, b, c}		
	Mostly day work	Mostly night shift work	Mostly rollover shift work
Mixed work, n (cases/non-cases)	25/160	0/24	28/134
HR (95% CI) ^d	1.11 (0.69–1.78)	NA	1.50 (0.93–2.42)
^a Adjusted for year of first employment and education, and stratified by 10-year birth cohorts.			
^b Complete work history i.e. up to eight employments as an offshore worker.			
^c Missing: Work schedule exposure category (n=119), year of first employment (n=1), education (n=21).			
^d Cox regression adapted to a case cohort design with age as the time scale.			