

**Table 1: Surveillance strategies (Exposure Registry, Disease Registry, and Disease Screening/Medical Surveillance)**

Surveillance Type	Surveillance strategy	Definition	Strengths	Limitations	Example	Characteristics	Can be used for NMSC/ solar UVR?
Exposure	Exposure Registry	Collects information about workers who have been exposed to a specific occupational risk or risks	-Allows for early identification of at-risk jobs or workers and disease -Allows for implementation of interventions that will prevent occupational injury and illness from occurring (Demers p 17)	-If voluntary results in <b>underreporting</b> -Generally only effective for specific high-hazard worksites or industries -If mandatory there is a need for legislation to be put in place	Worksafe BC exposure registry	-Since 2012 -British Columbia, Canada -Voluntary system -Exposures included: asbestos, formaldehyde, head lice, hepatitis, HIV, isocyanates, lead, meningitis, mercury, mould, noise, scabies, shingles, silica, thallium, tuberculosis, wood dust or other -Workers, employers, and others can record on-the-job exposures to harmful substances	Yes
Disease	Disease Registry	Collects information about workers who have been diagnosed with a specific disease	-Helps contribute to the secondary prevention of the disease -Helps to detect patterns of disease and this information can be used to prevent disease and reduce the health, economic and social costs	-Reporting is typically voluntary which results in <b>underreporting</b> -Exposure information collected retrospectively -Less useful for purposes of prevention -Limited by physician recognition of disease and willingness to participate ( <b>under participation</b> )	EPIDERM (Occupational skin surveillance)	-Since 1993 -Part of The Health and Occupation Reporting network (THOR) in UK -Voluntary reporting of occupational skin disease(including skin cancer) by 150 consultant dermatologists (20 core reporters report monthly and the remainder are sample reporters who are sampled at random and report for one month only each year) -Collects information about diagnosis, primary site of diagnosis, job title, industry, causal exposures (as reported by the physician), as well as date of first exposure	Yes
Disease	Disease screening/ medical surveillance	Monitors the occurrence of a specific disease or diseases within a defined population	-Program usually mandated by a regulatory body -Allows for early diagnosis and treatment of a specific OD -Reduces the chances of disease worsening or death	- <b>Under participation</b> by workers in the actual screening (often due to fear of discrimination, job loss, that test results are not confidential, positive test results)	Coal Workers Health Surveillance Program (CWHSP)	-Since 1969 -NIOSH, USA -Mandatory to offer/voluntary to participate -To help prevent early coal workers' pneumoconiosis or black lung from progressing to a disabling disease	Yes

Note: Exposure registry [1-3], Disease registry [1, 4-7], Disease screening [8-11]

**Table 2: Surveillance strategies (Sentinel Event Surveillance, Disease Surveillance via Data Linkage)**

Surveillance Type	Surveillance strategy	Definition	Strengths	Limitations	Example	Characteristics	Can be used for NMSC/ solar UVR
Disease	Sentinel Event Surveillance	Involves the ongoing/rapid identification of sentinel health events (defined as a preventable disease, disability, or untimely death that serves as a warning signal)	<ul style="list-style-type: none"> <li>-Identifies emerging occupational hazards</li> <li>-Reduces exposure and eliminates risks</li> </ul>	<ul style="list-style-type: none"> <li>-Often mandatory to report OD, but not in practice. This results in <b>underreporting</b></li> </ul>	Norwegian Labor Inspectorate (NLI) Registry for Work-Related disease (RAS)	<ul style="list-style-type: none"> <li>-Since 1977</li> <li>-Norway</li> <li>-Mandatory for physicians to report all suspected and confirmed cases of work-related diseases to the Norwegian Labour Inspectorate (NLI) central registry</li> <li>-A physician reports a suspected or confirmed work-related disease to the NLI, the reported cases are evaluated by the NLI physicians, and the report is entered into an electronic database, the report is then sent to the regional NLI offices and they are responsible for deciding whether the case will be investigated further or an intervention put in place</li> </ul>	Yes
Disease	Disease Surveillance via Data Linkage	Links various data sources to estimate the extent and distribution of occupational disease	<ul style="list-style-type: none"> <li>-Can provide reliable occupational information</li> <li>-Identifies at-risk groups of workers, and potential hazardous exposures, within the workplace</li> <li>-Contributes to understanding of occupational disease, and can support changes to public health practice</li> <li>-Can utilize numerous data sources</li> </ul>	<ul style="list-style-type: none"> <li>-System may be limiting (e.g. if it only includes individuals who have actually submitted a workers compensation claim)</li> <li>-Occupational information may not be accurate (e.g. if it focuses on occupation at the time a claim is submitted)</li> <li>-Disease information may not be accurate if using data such as billing information</li> <li>-This can result in some <b>underreporting</b>.</li> </ul>	Occupational Disease Surveillance System (ODSS)	<ul style="list-style-type: none"> <li>-Since 2016</li> <li>-Ontario, Canada</li> <li>-Links existing provincial health databases with job information in order to study occupational disease and inform prevention activities</li> <li>-Data sources include: WSIB Time-Loss Claims Database, Registered Persons Database(RPDB), Ontario Cancer Registry(OCR), OHIP eClaims Database, National Ambulatory Care Reporting System(NACRS), Discharge Abstract Database(DAD)</li> </ul>	Yes

Note: Sentinel Event Surveillance [1, 12, 13], Disease surveillance via data linkage [2, 14-16]

**Table 3: Top 5 barriers to developing and implementing an occupational surveillance system**

<b>Barriers/challenges</b>	<b>Number of informants (%)</b>	<b>Significance</b>
Underreporting/under participation	13 (59%)	<ul style="list-style-type: none"><li>-Mentioned as a limitation in the literature as well</li><li>-Makes it difficult to assess the true numbers of ODs</li><li>-Due to long latency of ODs</li><li>-Due to difficulty linking OD to work activities</li><li>-Physicians do not have time to report</li><li>-Physicians lack OD knowledge</li><li>-Employee does not want disease recognized as work-related</li></ul>
Funding	11 (50%)	<ul style="list-style-type: none"><li>-Funding needs to be for the long term to sustain a proper surveillance program.</li><li>-Often funding comes from research grants and there is no guarantee it will continue long term</li></ul>
Lack of awareness of risk	7 (32%)	<ul style="list-style-type: none"><li>-Employees often do not understand the occupational risk they face</li><li>-They are less likely to participate in surveillance activities</li></ul>
Mandatory vs voluntary	5 (23%)	<ul style="list-style-type: none"><li>-Programs are often voluntary in nature and this results in underreporting/under participation</li></ul>
Lack of a collection mechanism	5 (23%)	<ul style="list-style-type: none"><li>-Currently in Canada there is no collection mechanism for NMSC</li><li>-NMSC is not included in cancer registries</li><li>-Difficult to ascertain numbers of NMSC cases</li><li>-Occupation information is also not collected (link between OD and work difficult to make)</li></ul>

**Table 4: Top 5 facilitators in the development and implementation of an occupational surveillance system**

Facilitators	Number of informants (%)	Significance
Communication/collaboration	14 (64%)	<ul style="list-style-type: none"> <li>-Critical to have all stakeholders at the table to facilitate buy-in to the program</li> <li>-Allows for better understanding of processes and why information is being collected</li> <li>-Can be accomplished via outreach/education at worksite</li> <li>-Direct contact (relationship building) with employers and workers allows for buy-in and makes participation more likely</li> </ul>
Simple reporting process	5 (23%)	<ul style="list-style-type: none"> <li>-Will allow for buy-in particularly from physicians</li> <li>-Saves time</li> <li>-Can combat underreporting</li> </ul>
Long term funding	5 (23%)	<ul style="list-style-type: none"> <li>-Surveillance is a long term proposition</li> <li>-Guaranteed funding will allow for a strong program that will be impactful</li> </ul>
Strong team/leadership	4 (18%)	<ul style="list-style-type: none"> <li>-Will make the surveillance system manageable and successful in the long run</li> </ul>
Physician Related Factors	4 (18%)	<ul style="list-style-type: none"> <li>-Better education of physicians so that they can recognize OD and report it</li> <li>-Educating physicians about the usefulness of surveillance and how it helps workers</li> <li>-Have physicians collect occupation information so that there is a record of occupation</li> </ul>

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