

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

In Attendance:

CPC	CUPW
Alice Lafferty	Marc Roussel
Virginie Tremblay	Sylvain Sicotte
Sébastien Roy	Alvaro De La Cruz

Guests			
Paul Rivet	Cassandra Mackinnon	Carolyn James	Leah Lewis
Catherine Bernard	Deepthi Murthy	Steve Clark	Geoff Bickerton
Yves Henault			

Advisor	Danielle Fournier
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Agenda

Sr.	Topics	Presenter
0	Safety Pause/Mental Health/ Diversity safe moment	All
1	Opening Remarks	Committee Members
2	Minutes Review	Committee Members
3	Hazard Prevention Plan	Virginie Tremblay
4	2021 Stats Overview - MVC/Telematics	Cassandra Mackinnon
5	Road Safety Strategy Overview	Cassandra Mackinnon
6	MMHE / Fleet Update	Paul Rivet
7	Life Safety - Working at Heights	Catherine Bernard
8	Live Electrical Troubleshooting	Catherine Bernard
9	Hazard Identification Initiative	Catherine Bernard
10	Air Quality Policy	Virginie Tremblay
11	PDTs Pilot	Deepthi Murthy
12	Mental Health Strategy	Leah Lewis / Carolyn James
13	Workplace Harassment & Violence	Leah Lewis / Carolyn James
14	Autonomous Guided Vehicles	Glen MacGillivray / Cody Bjornsson
15	Other/Unresolved Topics	Committee Members

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

Standing Items

1. Opening Remarks

Round 1

CPC introduced a new recurring agenda item “Other/Unresolved Topics” to reserve time at the end of each NJHSC meeting for new topics, clarification, or discussions on committee functioning. CPC also committed to maintaining an action item log to ensure items are completed in a timely manner. The CPC co-chair expressed the importance of sticking to presentation timelines to ensure enough time for meaningful conversations.

CUPW disagreed with the time allotted for agenda items and explained that the complexity of certain topics requires more time. CUPW insisted that they are not in favour of rushing discussions, and want to ensure the committee is in alignment moving forward.

Round 2

CUPW is requesting that CPC allow N95 respirators to be worn by members without a fit test, and indicated that Health Canada has published material regarding community use of N95 respirators without fit tests. CUPW asserted that N95 respirators will provide the same or better level of protection than the masks currently offered to employees by CPC.

See CPC’s statement on N95 respirators in Appendix A below.

2. Reviewing Minutes & Agenda

CPC & CUPW agreed on the importance of reviewing minutes in a timely manner moving forward. CPC has booked meeting minute review sessions through the end of 2022 to ensure consistency. CPC indicated that approval was received for all 2021 NJHSC minutes, and that these had been published.

CUPW added that while 2021 minutes were approved, they reserve the right to amend minutes as needed.

Other Items

3. Hazard Prevention Plan

Presenter: Tremblay, Virginie

Overview:

This is a standing item, reviewed on a yearly basis, providing both parties with an opportunity to discuss health and safety statistics, including workplace violence statistics. The committee will identify areas of focus to reduce injuries and improve compliance with Health & Safety (H&S) legislation and regulations.

Discussion:

CPC noted that this review helps the committee evaluate priorities in Health & Safety (H&S), and can help set

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

the direction for programs, awareness campaigns, special projects or other initiatives. CPC clarified that the data presented includes all injuries, including Covid-19 injuries related to workplace transmission, and that the count captures all active employees as per the HR report.

CPC reported a high number of Manual Material Handling (MMH) injuries in Group 1 employees, and noted the opportunity for awareness campaigns targeting this group. Group 2 employees reported a high number of Slips, Trips & Falls (STF) injuries, especially during residential deliveries. CPC noted the importance of continued efforts with public facing campaigns targeting injuries during residential deliveries. Group 2 employees reported a higher proportion of injuries occurring towards the end of the day. CPC explained that this may in part be due to discrepancies in reporting.

CUPW expressed concern about the possibility of discrepancies in reporting injury time. CUPW indicated that if employees are becoming injured towards the end of their shift, this may be attributed to fatigue and to work overload. CUPW pointed out the higher injury rates on Mondays (26%), as they report that this is the busiest day for Group 2 employees.

CPC explained that the reports do request time of injury, but inconsistencies indicate that not all injuries are properly reported with respect to time. CPC agreed that reminders could be sent to team leaders and Local Joint Health & Safety Committees (LJHSC's) to ensure data integrity.

Groups 3 & 4 saw a decrease in MMH injuries, but STFs continue to be significant. The RSMC group saw a decrease in total injury count, despite an increase in the size of the group. This group saw a higher frequency of injuries in upper limbs, with 15% of injuries occurring at street letter furniture sites.

CUPW pointed out that CPC does not provide ergo helpers to the RSMC group unless requested, and some supervisors are allowing employees to go into the field without proper PPE. CUPW noted that providing a right-hand drive vehicle, an ergonomic aid or a reaching device (RRD) would reduce injuries in upper limbs.

CPC proposed to invite the National Collection & Delivery - rural/RSMC group to discuss deployment plans for RSMC reaching devices.

CUPW questioned inconsistencies in Covid-19 cases between the HPP reports and the CrossTab reports. CUPW pointed out that in the HPP report (page 4), Covid infections are categorized as infection (body part lungs). CUPW remarked that this report does not include an outbreak in one of CPC's facilities in early 2021, in which 311 employees tested positive, but only 1 case involving infection/lung was reported in CrossTab reports.

CPC explained that a team read through each Covid-19 report to ensure accuracy in the HPP, but there may have been reporting inconsistencies with the CrossTab reports. CPC will send the CrossTab reports to CUPW with all Covid-19 cases highlighted. CPC clarified that the Covid-19 outbreak was reported to ESDC in a separate process, and these were not processed through the Workers Compensation Board, hence are not shown in the Injury Management System format. CPC directed CUPW to a detailed section on Covid-19 in the annual report for additional information.

CUPW asked CPC for clarification on their definition of frequency in the HPP report, and questioned the way CPC calculated hours worked. CUPW requested this report be reformatted to reflect hours worked.

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

CPC explained that frequency was calculated using the number of injuries multiplied by total hours worked, using a basis of 8 hours per day.

CUPW pointed out that the HPP report (page 7) lists number of employees reporting, not hours worked, and suggested that this would change the graph dramatically.

CPC indicated that a definition could be added to the report moving forward. The report includes all lost time, modified duties and medical aid injuries. CPC agreed to reformat the HPP report to reflect hours worked and send to CUPW.

CUPW expressed concern that some employees who met the definition of disabling injuries as per article 2.1 of the Employer's Annual Hazardous Occurrence Report (EAHOR) continue to be misrepresented in the report as First Aid or Medical Aid.

CPC explained that they have conducted extensive forensic investigation on this data, and pilot sessions providing training on reporting practices were initiated in 2021.

CUPW maintained that any modified duty injury should be reported to Labour Canada regardless of medical attention, and that the data reported in this document is incorrect. CUPW pointed to a recent incident at Vancouver PPC where a number of cases were misreported as first aid. CUPW pointed out that the EAHOR definition of disabling injury differs from CPC's definition, as CPC has an added caveat that medical treatment must be provided. CUPW indicated that any proposal of modified duty or accommodation proposed by the Corporation to a worker must be accompanied by a medical note to ensure that the modified duty does not put the employee at risk. If this is not respected, CUPW maintains that this is a breach of the collective agreement. Further, CUPW argued that having a worker agree to certain accommodations without union consultation is a breach of their collective agreement under article 3 and article 54.

CPC insisted that the interpretation of the collective agreement should not be discussed at NJHSC, but rather at consultation.

CUPW inquired about incentives corresponding to injury reporting, as they are concerned that this is an incentive to change reports instead of reducing injuries.

CPC explained that improving H&S is a corporate priority.

CUPW suggested that reports be jointly reported in collaboration with the union moving forward as a way to ensure accurate reporting.

Action Items:

- CPC to invite the National Collection & Delivery - rural/RSMC group to May 2022 NJHSC meeting.
- CPC to send CUPW CrossTab Reports with Covid-19 cases highlighted
- CPC to send CUPW the HPP report reformatted with hours worked

4. 2021 Stats Overview: MVC/Telematics

Presenter: *Mackinnon, Cassandra*

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

Overview:

The committee reviewed the 2021 statistics on driver safety, which analysed motor vehicle collisions, speeding and seatbelt events. The committee will discuss trends in telematics and identify areas of focus to reduce injuries and improve compliance.

Discussion:

CUPW expressed their support for additional awareness programs, but made clear that they are not in favour of policing behaviours. CUPW inquired about whether telematics leads to discipline, and how speeding drivers are identified.

CPC clarified that telematics data is not directly used to discipline drivers, and that on- the-road observation is used to identify drivers who are excessively speeding. Observations are conducted by trained drivers, and emphasized that supervisors are not expected to keep up with drivers speeding as this may put them at risk of harm.

CUPW asked CPC to explain the methods used to determine a speeding violation.

CPC stated that when the vehicle is followed, the observer targets roadside reference points and applies the mile 1, mile 2, mile 3 method, to determine if speeding is occurring.

CUPW asserted that a shadowing observation system is not accurate and is strongly against this practice. CUPW believes that this puts additional stress on members when they are being followed, and the observer could be placing themselves at risk during their observations without having specialized training. CUPW inquired about whether telematics data was used to target vehicles for observation.

CPC clarified that telematics data is used to identify areas of risk for observation purposes, but that no individuals were identified with this data.

5. Road Safety Strategy Overview

Presenter: *Mackinnon, Cassandra*

Overview:

The committee reviewed the Road Safety Strategy elements and initiatives planned for 2022 and beyond, which includes a professional driver improvement program and other upskilling activities.

Discussion:

CUPW inquired about whether the professional driver improvement program would have an evaluation component.

CPC responded that there were no formal evaluation components, where informative training is used as refresher training.

6. MMHE / Fleet Updates

Presenter: *Rivet, Paul (Round 1) & Clark, Steve (Round 2)*

Overview:

This is a standing item providing both parties an opportunity to discuss issues related to fleet vehicles. An overview of peak season fleet updates was provided by Paul Rivet, and an update on the NLDV was provided by

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

Steve Clark.

Round 1 Discussion:

CUPW inquired about reports that some CPC facilities in the Atlantic region were reducing speed in LR-7 to extend the life of the equipment.

CPC indicated that discussions were had about the effects of reducing equipment speed, as a correlation between reducing speed and reduced parts maintenance requests for this equipment was observed. At this time, no communications have been sent out regarding this matter.

CUPW agrees that a speed reduction can be a safer practice, but wonders about the motivation for this initiative. However, if proper communication is done before implementation, it would be more constructive.

CPC detailed possible health & safety benefits of reducing equipment speed, and explained that the Fleet team is looking into the possibility of setting guidelines for equipment speed in facilities.

CUPW inquired about recent changes in battery types, from wet-cell batteries to maintenance-free batteries.

CPC explained that they have installed NexSys maintenance-free batteries in a few smaller facilities, and intend to slowly replace wet-cell batteries with this new model, as budget permits. The maintenance-free batteries are intended for smaller sites, as larger sites require frequent charging, and this model would not be sufficient.

CUPW inquired about whether this change would impact staffing or duties for members, and asked for a list of locations who have received the new battery type.

CPC responded that there were no staffing impacts, and that this was simply eliminating the task of battery watering.

Round 2 Discussion:

CUPW requested an update on the status of NDLV vehicles.

CPC detailed that there are 9 pilot vehicles currently in testing phases, which include paint testing, emissions testing, Canadian Motor Vehicle Safety Standards (CMVSS) certification, electrical testing/certification, collision testing, etc. CPC explained that both emissions testing and CMVSS certification are lengthy certification processes. A prototype is to be delivered to Ottawa in the spring for a estimated period of 90 days, and will have the previously discussed modifications to cargo design. CPC detailed next steps for electric vehicles (EV) later in 2022, and hopes to have 500 EVs on the street by the end of 2022, with additional vehicles arriving in subsequent years. These EV's will successively replace the older models in the fleet.

CUPW asked about design changes that were made to the NDLV, and requested permission to share photos of the prototypes with their members.

CPC agreed to share the key design changes, which could be reviewed by the group in person once the prototype is delivered in late spring. CPC agreed to share photos with members, but noted that there will be changes made to the vehicle.

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

Action Items:

- CPC to share list of locations that have received NexSys maintenance-free batteries
- CPC to share key design changes in NDLV

7. Life Safety: Working at Heights

Presenter: *Bernard, Catherine*

Overview:

An update on the working at heights program was provided, introducing the concept for a standardized new template for rescue plan & fall protection plan for aerial work platform work as well as other working at heights tasks.

Discussion:

CUPW inquired about changes being made to recurring permits. CPC clarified that regulation requires that a fall protection plan be in place, and that permits are not legally required. The permits are not being consistently used as intended, which is why they are being reviewed as part of this update.

CUPW raised concerns about eliminating permits, and requested a copy of the proposal. CPC clarified that the draft documents are still being reviewed internally and final draft documents will be submitted for their review. CUPW requested further consultations with members in Toronto and Montreal to ensure alignment on this initiative. CPC agreed to schedule an on site inspection in Montreal & Toronto with a test group group to review the proposal and documents.

Action Items:

- CUPW to send test group participant names to CPC
- CPC to share a copy of the draft proposal and documents and to arrange the consultation with the CUPW participants.

8. Live Electrical Troubleshooting

Presenter: *Bernard, Catherine*

Overview:

An update on the Live Electrical Troubleshooting (LET) was provided. To date, 440 participants completed the evaluation with an approximate 50% passing rate. The H&S check-ins with the technicians was well-received and their feedback is being compiled to identify continuous improvement initiatives. During the H&S check-ins, the concept of the simulation tool was introduced to the technicians as it is a safe way for employees to practice troubleshooting various scenarios. CPC also updated the committee on updates related to the CSA Z465 standard, which will be reflected in documentation & labels.

Discussion:

CUPW expressed concern about the low passing rate, and inquired about scenarios that seemed problematic for many. CUPW requested information about CUPW member success rates & locations from CPC.

CPC explained that there were certain questions associated with important safety precautions that had a higher weight. If an employee failed one of these key safety questions, then they did not pass the evaluations. CPC

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

provided an example of failing to let stored energy dissipate. CPC agreed to share the available information about success rates & locations with the committee.

CUPW inquired about consequences of failing this evaluation, and asked if the Corporation plans on providing a training refresh. CUPW noted that certain members were initially reticent about the LET when it was first introduced.

CPC clarified that if an employee did not pass the LET evaluation, they could no longer perform LET. Based on where the employees failed the evaluation and the need of their group, their leader would work with them to provide the required competencies and then they could retry the evaluation. CPC emphasized the importance of technicians feeling confident and comfortable when troubleshooting, which is where the LET simulation tool is a great solution as it provides a safe avenue to gain experience with LET. At this point, plans for refreshers have not been formally discussed, but could be a consideration.

Action Items:

- CPC to provide information about LET success rates & locations to CUPW.

9. Hazard Identification Initiative

Presenter: *Bernard, Catherine*

Overview:

CPC presented a seasonal risk identification package, which will complement the national "First Winter" program introduced in 2021. The goal is to expand the "First Winter" program to cover all safety topics over four seasons.

Discussion:

CUPW explained the importance of giving employees sufficient time to complete this training without impacting their regular workload.

CPC agreed to make guidelines and communications clear about expectations surrounding this initiative.

10. Air Quality Policy

Presenter: *Tremblay, Virginia*

Overview:

CPC provided an short update regarding the Air Quality Policy, and that their intention is to present the existing policy sooner, to align themselves with the start of wildfire season in April. Awareness materials will be issued in a communication in late March or early April to ensure employees are aware and comfortable with material & monitoring tools.

Discussion:

CUPW expressed the importance of considering weather factors along with this policy, as conditions may differ based on weather patterns and wind in each location.

11. PDTs Pilot

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

Presenter: *Murthy, Deepthi*

Overview:

CPC presented the “Person-down” PDT feature, which detects falls and notifies a dispatcher if the delivery agent is unable to safely recover from the fall. Upon experiencing a fall, a time-sensitive alert is displayed on the PDT. If the individual is unresponsive after a certain time has elapsed, an alert will be sent to the dispatcher for a follow-up phone call. The intention of this feature is to provide additional safety measures for employees at higher risk of STFs. CPC is seeking CUPW’s feedback before piloting this feature.

Discussion:

CUPW explained that they do not believe that this feature would provide added value. Employees are not currently expected to answer calls from their PDT’s, CUPW raised concerns about accidentally triggering the person down feature, and emphasized the potential toll of mental stress on employees if they believe they are being monitored. CUPW does not support the use of GPS/telematics to monitor their members.

CPC clarified that the intention of this feature is to provide additional safety measures, and that any GPS features could be disabled on PDTs.

CUPW explained that most employees have personal cell phones that can be used to call for help in the event of a fall, and that they do not believe this feature has added value.

12. Mental Health Strategy

Presenter: *Lewis, Leah*

Overview:

The 5-year Mental Health Strategy was presented to the committee. The plan, developed in collaboration with Mercer, uses the National Standard for Psychological Health & Safety. 11 pilot sites were identified for launch at the team leader level in 2022, followed by employee-level engagement in year 2. Communications, and surveys will be introduced to this end, and focus groups will be utilized to gain a deeper understanding of risks and areas of opportunity which will then lead to development of action plans to address areas of concern.

Discussion:

Before the Mental Health Strategy was presented, CUPW shared a recent occurrence where a supervisor made inappropriate and explicit comments regarding the Employee & Family Assistance Program (EFAP) to a group of employees, which alluded to the use of a rope. CUPW explained that statements like these were inappropriate, and that mental health should be taken seriously at CPC. CPC agreed to the inappropriateness of the alleged statement and will investigate the incident with the local management.

CUPW suggested statistics on short-term disability (STD), claims related to mental health that were denied should be considered for the dashboard. CUPW explained that this information could help direct focus on mental health initiatives.

CPC confirmed this suggestion would be considered to see how it could be included..

CUPW inquired about the role of social stewards in this initiative stated in the presentation.

CPC responded that social stewards were included as workplace partners, but that any discussions related to the

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

role of social steward roles should be conducted at national consultation.

CUPW requested clarification on the survey, and requested a copy.

CPC responded that the survey used was developed by Guarding Minds at Work, and is available at no cost to all Canadians. CPC will share the link for the survey to the committee.

Action Items:

- CPC to provide link to Guarding Minds survey.

13. Workplace Harassment & Violence (WHV)

Presenter: *Lewis, Leah*

Overview:

CPC presented updates to the Response to Notice of Occurrence (RNOO) in instances of workplace harassment & violence, which comply with collective agreement requirements. CPC also detailed upcoming organizational changes, which would see WHV investigator/coordinator and designated recipient roles move to the field Human Rights team.

Discussion:

CUPW requested clarification on the RNOO changes.

CUPW asserted that, given the transfer of designated recipient to the Human Rights team, they wish to have a neutral third party act as designated recipient.

CPC responded that this transfer was informed by common practices in other organizations under Bill C-65, and explained that the human rights advisors are seen as neutral parties. CPC agreed to review regulations to ensure this change is compliant.

CUPW responded that having a neutral third party would lead to increased confidence and trust in management. CUPW inquired about daily workplace violence reports, and reminded CPC of their responsibility to notify CUPW of WHV incidents.

CPC explained that the ITMS reports do not capture all WHV incidents, which is why CPC proposed to transition to the new reporting dashboard (PowerBI) to report on WHV. PowerBI would include aggregate data, not individual cases. CPC indicated that if there is an interest from CUPW for individual case information, CPC would need to utilize CrossTab reports to pull this information.

Unresolved Topics

14. Other/Unresolved Topics

Community Mail Box (CMB) lanyard/keychain:

CUPW requested an update on quick-release lanyards used at CMB. CPC explained that a number of options were evaluated in collaboration with the uniform committee, but confirmed that the team is still evaluating

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

solutions for disconnecting from CMB's. This is in part due to a lack of industry standards on force required for quick-release lanyards.

CUPW expressed concern that the current model used poses a risk to employees, as the force required to release from a CMB during an emergency is too great. CUPW recalls that this situation has been under discussion by both the National Joint Uniform Committee and the National Health and Safety Committee for over 3 years. CUPW proposes, as already agreed in December 2019 in Gatineau, that the Committee meet at a BPCOM to conduct field trials with different types of lanyards previously presented to the NJUC.

CPC agreed that the topics needs to be resolved and will bring forward samples at the next NJHSC meeting.

- The committee agreed to bring this forward as an agenda item at the May 2022 NJHSC meeting , and provide samples to the committee.

CMB Trays:

CUPW requested that trays be provided in CMB, as there are occasionally hazardous materials in these boxes. CUPW raised that while gloves are provided to employees, these are not always practical in winter months. To prevent letter carriers from being harmed during collection, CUPW is requesting the addition of a tray in the CMB, as this would allow letter carriers would be able to collect mail safely. CUPW indicated that these trays were previously available in some locations but were not maintained over time.

CPC agreed to take this away for discussion.

Action:

CPC to discuss CMB trays internally

Retail training for Financial Services:

CPC provided an update on retail training for Financial Services, which was last at NJHSC in June 2021. Since that time, minor changes were made to the training booklet.

CUPW indicated that they would like to review these changes, and emphasized that they do not consider this booklet as training. CUPW requested an ad hoc meeting on this topic.

Action:

- CPC to share booklet edits & organize a meeting to discuss overall training strategy

Risk Assessments with NJHSC's at Gateway:

CPC highlighted an issue of a CUPW member challenging the risk assessment process by requesting to have risk assessments completed externally. CPC clarified that risk assessments are conducted jointly at the local level to identify risks, and that inviting third party evaluators would be contrary to the Corporation's Hazard Prevention Policy.

CUPW agreed to discuss this with the local group, and proposed that the NJHSC visit the site to review risk assessments at this location.

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

Action:

- CUPW to confirm dates with the committee for risk assessment site visit

Agenda Setting Meetings:

CPC proposed that the co-chairs meet in advance of NJHSC meetings to review agenda items and time allocations.

Action:

- CPC to book regular agenda review sessions with co-chairs & NJHSC coordinator

Meetings Held in 2021:

February 24 (X) February 28	May 5 ()	July 7 ()	September 8 ()	November 10 ()
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National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

Appendix A: CPC Statement on N95 respirators

Optimum efficiency of respiratory protection is based on Fit, Filtration and Breathability. Sourcing limitations related to verified, certified supplies prioritized for healthcare workers makes the market volatile. The World Health Organization continues to promote the use of medical respirators (such as N95 and KN95) for aerosol-generating medical procedures by healthcare workers providing care to COVID-19 patients^{1,2}.

While the filtering efficiency of N95 respirators provides an enhanced protection to the wearer as well as the workplace, such PPE are heavily regulated under CSA Z94.4- Selection, Use and Care of Respirators³ and COSH Regulation art. 12.13⁴

- Fit-testing is required to be performed & recorded by a qualified fitter for each individual
- No-beard policy for proper fit & employee must be medically approved to wear such for 8hr straight

Proper fitting is essential to ensure level of protection intended; the effect of gaps between the contour of the face and the mask as caused by an improper fit will affect the efficiency of any face mask⁵, however the filter efficiency is greatly reduced in ill-fitting N95 vs ill-fitting medical mask⁶; poorly fitted N95 respirators offered a range of protection, in some cases comparable with surgical and cloth masks⁷, or even a negligible efficiency⁸. Increased filtration capacities and tight fit of N95 and KN95 respirators can negatively impact breathability, making it challenging for donning such respiratory protection for full shift. Individuals with breathing conditions such as asthma may not be medically fit to wear a respirator. Commercial N95 respirators are currently used at CPC for specific tasks requiring respiratory protection related to airborne particle contaminants outside of COVID-19; as the supply chain remains extremely volatile to procure such at this time, it is critical the supply can remain guaranteed for the tasks identified, mainly in Maintenance. CPC carries out due diligence to ensure that we are not getting counterfeit or recalled respirators. There are a lot of spurious products in the market especially amongst the KN95 lots. More than 60% of KN95 in the US market are counterfeit⁹, and nearly 200 brands of KN95 were recalled by Health Canada^{10,11} as these items were relabelled as uncertified non-medical face-covers since they failed to meet 95% filtration performance.

¹ <https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19-masks>

² <https://www.who.int/publications/i/item/WHO-2019-nCoV-IPC-2021.1>

³ <https://www.csagroup.org/store/product/CSA%20Z94.4.1:21/>

⁴ <https://laws-lois.justice.gc.ca/eng/regulations/sor-86-304/fulltext.html#h-895137>

⁵ Balazy, A. et al. Do N95 respirators provide 95% protection level against airborne viruses, and how adequate are surgical masks?. *Am. J. Infect. Control* 34, 51–57 (2006).; Leung, N. H. L. et al. Respiratory virus shedding in exhaled breath and efficacy of face masks. *Nat. Med.* 26, 676–680 (2020).; Bowen, L. E. Does that face mask really protect you?. *Appl. Biosaf.* 15, 67–71 (2010).; Rengasamy, S., Eimer, B. & Shaffer, R. E. Simple respiratory protection—evaluation of the filtration performance of cloth masks and common fabric materials against 20–1000 nm size particles. *Ann. Occup. Hyg.* 54, 789–798 (2010).

⁶ See Table 1, [Aerosol Filtration Efficiency of Common Fabrics Used in Respiratory Cloth Masks \(nih.gov\)](#)

⁷ <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0245688>

⁸ See Figure 1, <https://aip.scitation.org/doi/10.1063/5.0057100>

⁹ <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/types-of-masks.html>, <https://www.cdc.gov/niosh/npptl/usernotices/counterfeitResp.html>

¹⁰ Recent testing performed by the CDC/NIOSH resulted in concerns with some KN95 respirators (specifically those with ear loop design) that pose a difficulty in achieving a proper fit, which is essential for use. In addition, several models of respirators, including some KN95 respirators, failed to meet the filtration criteria of 95%. ([November 29 2021](#)). In June of 2020, last updated February 11 2021, nearly 200 brands of KN95 were [recalled by Health Canada](#); these items were relabelled as uncertified non-medical masks as they failed to meet 95% filtration.

¹¹ <https://recalls-rappels.canada.ca/en/alert-recall/medical-device-respirator-recalls>

National Joint Health & Safety Committee Meeting Minutes

February 24, 2022

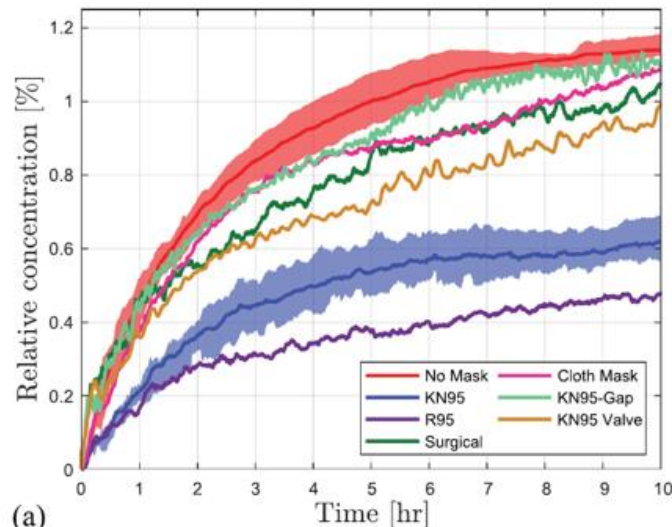
(Abhiteja Konda, 2020)

Table 1

Filtration Efficiencies of Various Test Specimens at a Flow Rate of 1.2 CFM and the Corresponding Differential Pressure (ΔP) across the Specimen^a

sample/fabric	flow rate: 1.2 CFM		
	filter efficiency (%)		pressure differential
	<300 nm average \pm error	>300 nm average \pm error	
N95 (no gap)	85 \pm 15	99.9 \pm 0.1	2.2
N95 (with gap)	34 \pm 15	12 \pm 3	2.2
surgical mask (no gap)	76 \pm 22	99.6 \pm 0.1	2.5
surgical mask (with gap)	50 \pm 7	44 \pm 3	2.5
cotton quilt	96 \pm 2	96.1 \pm 0.3	2.7
quilter's cotton (80 TPI), 1 layer	9 \pm 13	14 \pm 1	2.2
quilter's cotton (80 TPI), 2 layers	38 \pm 11	49 \pm 3	2.5
flannel	57 \pm 8	44 \pm 2	2.2
cotton (600 TPI), 1 layer	79 \pm 23	98.4 \pm 0.2	2.5
cotton (600 TPI), 2 layers	82 \pm 19	99.5 \pm 0.1	2.5

Figure 1



(Yash Shah, 2021) (a)

- The results show that a standard surgical and three-ply cloth masks, which see current widespread use, filter at apparent efficiencies of only 12.4% and 9.8%, respectively.[...] while a loose-fitting KN95 provides a negligible apparent filtration efficiency (3.4%). (ref. Experimental investigation of indoor aerosol dispersion and accumulation in the context of COVID-19: Effects of masks and ventilation, <https://doi.org/10.1063/5.0057100>)
- Light-green line = unfitted respirator, closest comparable to no-mask at all