MDA No.	1	0	9	4

Title: Tube Dust

Executive Summary

On 27 June 2019, the Committee agreed that authority be delegated to the Chair, in consultation with party Group Lead Members, to agree any output from the discussion. [Tube Dust]

Decision

That the letter on Tube dust be agreed.

Assembly Member
I confirm that I do not have any disclosable pecuniary interests in the proposed decision and take the decision in compliance with the Code of Conduct for elected Members of the Authority.

The above request has my approval.

Signature Caroline Russell **Date** 18/12/19

Printed Name
Caroline Russell AM, Chair of the Environment Committee

Decision by an Assembly Member under Delegated Authority

Notes

1. The Lead Officer should prepare this form for signature by relevant Members of the Assembly to record any instance where the Member proposes to take action under a specific delegated authority. The purpose of the form is to record the advice received from officers, and the decision made

2. **The 'background' section (below) should be used to include an indication as to whether the information contained in / referred to in this Form should be considered as exempt under the Freedom of Information Act 2000 (FoIA), or the Environmental Information Regulations 2004 (EIR). If so, the specimen Annexe (attached below) should be used. If this form does deal with exempt information, you must submit both parts of this form for approval together.**

Background and proposed next steps:

On 27 June 2019, the Committee agreed that authority be delegated to the Chair, in consultation with party Group Lead Members, to agree any output from the discussion. [Tube Dust]

The decision will be reported back to the Health Committee meeting on 15 January 2020.

Confirmation that appropriate delegated authority exists for this decision

Signed by Committee Services		Date	12/12/19
Print Name: Lauren Harvey		Tel:	4383

Financial implications

NOT REQUIRED

Signed by Finance	N/A	Date	.....
Print Name	N/A	Tel:	.....

Legal implications

The Chair of the Environment Committee has the power to make the decision set out in this report.

Signed by Legal	.....	Date	12.12.19
Print Name	Emma Strain, Monitoring Officer	Tel:	X 4399

Supporting detail/List of Consultees:

Léonie Cooper AM (Deputy Chair), Tony Arbour AM and David Kurten AM

Public Access to Information

Information in this form (Part 1) is subject to the FoIA, or the EIR and will be made available on the GLA Website within one working day of approval.

If immediate publication risks compromising the implementation of the decision (for example, to complete a procurement process), it can be deferred until a specific date. Deferral periods should be kept to the shortest length strictly necessary. **Note:** this form (Part 1) will either be published within one working day after it has been approved or on the defer date.

Part 1 – Deferral
Is the publication of Part 1 of this approval to be deferred? No

Until what date: (a date is required if deferring)

Part 2 – Sensitive information

Only the facts or advice that would be exempt from disclosure under FoIA or EIR should be included in the separate Part 2 form, together with the legal rationale for non-publication.

Is there a part 2 form - No

Lead Officer/Author

Signed	.....	Date 18/12/19
Print Name	**Lauren Harvey**	Tel: 4383
Job Title	**Committee Officer**	
Countersigned by Director	.....	Date 19.12.19
Print Name	**Ed Williams**	Tel: X4399

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Caroline Russell AM
Chair of the Environment Committee

18 December 2019

Dear Sadiq,

Tube dust

I am writing to you on behalf of the Environment Committee, to follow up on our ongoing inquiry on Tube dust. As part of this investigation, the committee has discussed Tube dust in three meetings, including one in early 2019 following the release of the Committee on the Medical Effects of Air Pollutants (COMEAP) statement on particulate matter (PM) in the Underground[1]), and most recently in June 2019. This letter outlines the committee's understanding of the evidence on Tube dust and makes recommendations on areas the Committee believes need urgent progress to ensure the wellbeing of Londoners who travel and work in the Tube. The Committee is aware that until more conclusive evidence is available many Londoners may remain vulnerable to exposure to Tube dust and, as such, we urge TfL and the Mayor to treat this issue with a due sense of urgency, informed by robust evidence on the level of risk. The committee awaits a timely response to the recommendations below.

Health impact of Tube dust

The level of Tube dust has been of public concern for some time. At its meeting in June 2019, the committee heard from Transport from London (TfL) that the evidence on the harmful effects of Tube dust is inconclusive. The committee understands that some studies, including the COMEAP statement, have found that the particulate matter in the underground "can induce inflammatory responses and oxidative stress" in lung cells.[2] The COMEAP statement, however, recognises that *"none of this evidence is directly transferrable to assessing the health risk to the travelling public from exposure to particulate matter in the London Underground."*[3]

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/769884/COMEAP_TfL_Statement.pdf

[2] TfL updated the committee on the results from toxicity *in vitro* studies conducted by Queen Mary University. The studies found that Underground particulate matter show in increase in the oxidative and inflammatory response of lung cells. This finding was also reflected in the COMEAP statement – see COMEAP statement, November 2018, p. 17.

[3] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/769884/COMEAP_TfL_Statement.pdf

In light of this, the COMEAP statement has indicated that more evidence is needed to be able to determine the nature and extent of any health risk that particulate matter in the underground could pose to passengers and staff alike. We need to better understand the composition of Tube dust - which the committee heard was different to the composition of ambient outdoor pollution, with no combustion particles underground

> *"The makeup of the particles is completely different in the underground from the ambient. It is virtually all metals or metal oxides. You get very little of that stuff in the ambient atmosphere. In the underground, you do not get any of the diesel exhausts and the combustion emissions that we know are toxic. IARC classify diesel exhaust as a human carcinogen and so on. You do not get that in the [London] Underground. There are good reasons for needing to do more detailed toxicological work on the particles that you get from the underground. We just do not know how toxic they are or how benign they are. That is the crucial area here."* - Professor Martin Williams, Air Quality Research, King's College London.[4]

This is further supported by the COMEAP statement which confirms that black carbon measured in outdoor ambient pollution contains toxic products arising from combustion sources such as diesel engines. However, in the London Underground environment it states that the sources of particles are different i.e. carbon and oxidised metallic wear products. As such the concentrations reported and the composition of those particles are not directly comparable to those in ambient outdoor air pollution. Given that it is the composition, rather than the concentration, of particulate matter that poses a greater risk to health more evidence is needed to determine the health risk.[5]

The committee recognises that further evidence, and consistent long-term collection of data, are required to ascertain 1) the toxicity of Tube dust, and 2) the level of exposure that is needed to observe and experience negative health impacts. We heard from TfL that two studies focusing on occupational staff were being conducted to this end: 1) a long-term study looking at employees over the last 50 years to understand impacts on cardiovascular ailments that may have caused people to die after they have left their roles; and 2) a short-term study looking at sickness data from underground staff members.

TfL has confirmed that work is underway with Kings College London and Imperial to commence these studies. In addition, TfL has indicated it is supporting a long-term study by King's College London which will track the health status of individuals with Chronic Obstructive Pulmonary Disease travelling on the Tube in order to assess the negative impact of Tube dust on their condition.

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[4] London Assembly Environment Committee of January 2019.

[5] There has been interest in quantifying the health effects of ambient pollution on the basis of reported associations with black carbon (BC), a component of the PM2.5 arising from combustion sources such as diesel engines. In outdoor air, BC is likely to act both as a carrier of toxic products of combustion, and as a marker of exposure to a mixture of pollutants arising from combustion. When used in the London Underground, optical measurement techniques (eg use of Aethalometer) produce mass concentration of BC results which are not comparable with those of ambient air, due to the different optical properties of the London Underground particles. In the underground subway microenvironment, the sources of lightabsorbing particles are very different (carbon and oxidised metallic wear products) and the measurements from these techniques should therefore be interpreted with caution, as the concentrations reported and the composition of the particles measured are not comparable to those for outdoor air. In addition, because it arises from different sources underground, in subways BC does not act as a marker of the same pollutants as it does above ground. COMEAP statement, page 13, November 2018.

The committee asks that TfL keeps us informed of the progress on the studies above, confirms the timelines for the publication of study results, and shares the results with us as soon as they are available.

Additionally, the committee would like to be informed of any other steps TfL takes with the objective of building a stronger evidence base on the toxicity and concentration levels of Tube dust.

Compliance with Health and Safety Executive (HSE) Workplace Exposure Limits (WELs)

TfL assured the committee that between 2003 and 2016 it did not find any change in the levels of Tube dust, and that the level and duration of exposure remained the same.[6] The COMEAP statement shows that concentrations of particulate matter on underground platforms are typically much higher than in ambient outdoor air,[7] however as stated above given the varying properties of ambient outdoor pollution and underground pollution, concentrations of both are not directly comparable. Despite levels remaining steady, there remains great concern around the concentration of particulate matter in the underground system.

Further to this, the committee heard from the National Union of Rail, Maritime and Transport (RMT) workers that current occupational limits set by the Health and Safety Executive (HSE) were not considered adequate. Dust particulate matter is currently assessed against Workplace Exposure Limits (WELs) of 4 mg/m^3, averaged over an 8-hour reference period.[8][9] Based on this evidence, TfL has suggested that their monitoring shows that the composition of dust does not contain components at levels which are likely to pose a risk to health of TfL employees.[10] However, the RMT Union representative commented at the June public meeting:

> "*No, I do not [think HSE limits are adequate]. That is TfL's view, too. I have been in meetings where they have said, 'We aim to get 50% below what the legislation says and where that is not possible 25%,' because the HSE itself admits that just because something is just below the legal limit, it does not actually mean it is safe*."- Cat Cray, Stations Health and Safety Council Member, RMT Union

The committee heard that the HSE WELs were set in 2005. This poses a serious question as to whether current WELs can be deemed fit for purpose or even applicable to assessing underground particulate matter, especially given that we cannot rule out the potential health risks of Tube dust. The Institute of Occupational Medicine has also questioned the limits put in place by the HSE, stating that "*until safe limits are put in place, employers should aim to keep exposure to respirable dust below 1 mg/m3 and inhalable dust below 5 mg/m^3*".[11]

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[6] London Assembly Environment Committee of June 2019.

[7] A number of measurements from different studies are reported, from 250μg/m^3 to 492μg/m^3 $PM_{2.5}$. Previous statements of Tube dust concentrations have revealed some levels over 1,000μg/m^3.[7] These compare to measurements from beside busy London roads quoted in the COMEAP statement of 16μg/m^3 and 26μg/m^3.

[8] Health and Safety Executive Document EH40/2005, 2nd Edition 2011.

[9] The long-term 8-hour exposure limits are averages for an 8 hour shift. If during a shift the operator is only exposed to a level of dust for 6 hours, the 8-hour time weighted average is calculated to allow for comparison with HSE Workplace Exposure Limits.

[10] http://content.tfl.gov.uk/air-quality-on-underground.pdf

[11] https://cleanair.london/hot-topics/tube-dust-is-not-safe/

The committee also heard that the HSE only requires measurements of PM_4 and above. In turn, this means that measurements of $PM_{2.5}$, which is the most dangerous particulate matter due to its size and potential effects on the body, is not required by law. TfL has assured the committee that it wishes to comply with the limits set by the Institute of Occupational Medicine (IOM), which are much lower than the HSE WELs.[12] However, clarity on when these standards will be adopted and come into effect is still required.

The committee recommends that TfL gives further attention to the limitations of HSE WELs, and takes prompt action to assess the appropriateness of these limits as applied to underground particulate matter levels. The committee also asks to be kept informed of any steps taken to adopt other occupational health standards, with updates every 6 months.

It was also brought to the attention of the committee that the exposure to Tube dust of underground cleaners is not monitored as they are not employed directly by TfL. As the RMT Union representative commented:

> "*We are not monitoring and measuring the effects on our station cleaners, who could possibly be spending more time in a platform area than a member of London Underground staff, except that they, on a technicality, have a different employer. Any member of staff who works on the London Underground who could be exposed needs to be considered, and we must not rule cleaners out*." - Cat Cray, Stations Health and Safety Council Member, RMT Union

Given the work performed by cleaners and their exposure to Tube dust, it seems that collecting monitoring data from them could 1) offer a more complete understanding of the health impact of Tube dust, and 2) help to inform how best to respond to Tube dust for different levels of exposure.

The committee recommends that all station staff should be monitored irrespective of their employer, to ensure that TfL provides as healthy a workplace as possible for all underground staff. The committee asks that TfL provides an update on how it is monitoring cleaners and other non-TFL staff members working in the underground.

Prevention and minimisation techniques

The committee heard that various trials forming part of TfL's enhanced cleaning programme to prevent and minimise levels of Tube dust are ongoing. First, a dust suppressant trial is being conducted on the Waterloo & City line, for which monitoring has been ongoing since December 2018. Results from this trial showed an initial 50% reduction in particulate matter, followed by a 40% reduction at a later stage of the trial. We understand that this trial was due to come to an end in July.

On the Bakerloo line, there is an ongoing trial which started in June 2019, and which uses a trolley-based vacuum cleaner. We understand that results were intended to be available from September 2019 and that additional monitoring readings will be taken for about three months after that to

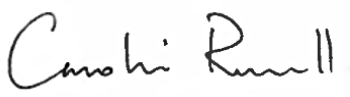
[12] London Assembly Environment Committee of June 2019

understand the longer-term impact of that cleaning. TfL informed the committee that by September 2019 it would have a decision on whether it will include the trolley-based vacuum in its enhanced cleaning program. A further trial using a light trolley vacuum method between Baron's Court and Earl's Court on the Piccadilly line was due to be completed in October 2019. Another trial using the dust suppression method was due to start in July 2019 at the bottom end of the Northern line. The committee heard that the findings and analysis from these trials will most likely be ready in December 2019.

The committee asks that TfL provides updates on the status of the enhanced cleaning regime, including the adoption of the trolley-based vacuum regime, the dust suppressant regime and any outstanding results from any trials being conducted.

I would like to request a formal response to our recommendations before Friday 7 February , 2020. When providing your response, please copy in Liv Verghese (liv.verghese@london.gov.uk), a Policy Adviser at the London Assembly's Scrutiny Team.

Yours sincerely,



Caroline Russell AM
Chair of the Environment Committee