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To: Amazon UK

By email only

To Amazon UK,

I am writing on behalf of the privacy and civil liberties organisation Big Brother Watch to raise concerns about your use of thermal imaging cameras at Amazon UK fulfilment centres[1] and to request that you desist in their use. In this letter I also request further information.

I am concerned that thermal imaging cameras represent a worrying surveillance creep and provide little more than security theatre at a serious cost to rights. In particular, I am concerned that:

- the impact on individuals' privacy rights is profound, yet appears not to have been assessed,
- the impact on individuals' data protection rights is serious, yet an impact assessment is not publicly available,
- there is no available information as to the accuracy, necessity and proportionality of your use of thermal surveillance,
- the ability of the surveillance measure to meet the purported aim, and therefore its utility, is not supported by scientific evidence and could even be counter-productive,
- the consequential impact on rights, including employment rights, is serious yet appears to be unaccounted for, and
- there are no clear safeguards to prevent the normalisation and endurance of this extended surveillance apparatus.

1 Coronavirus: Amazon using thermal cameras to detect Covid-19 – BBC News, 20 April 2020: https://www.bbc.co.uk/news/technology-52356177

Privacy and data protection

Thermal imaging is a particularly intrusive form of surveillance that incurs a novel and serious loss of personal and collective privacy. The use of these cameras engages individuals' right to privacy, protected by Article 8 of the European Convention on Human Rights (ECHR). They reveal individuals' bodies, and generate sensitive data about them, in a manner that is not ordinarily publicly visible. They could expose features that individuals may seek to conceal (e.g. prosthetic limbs). Thermal cameras are a lurch towards pervasive monitoring of sensitive health data and represent a major extension of workplace surveillance apparatus.

Thermal surveillance engages individuals' rights under the General Data Protection Regulation (GDPR) and the Data Protection Act 2018 (DPA). Thermal imaging involves the generation, collection and analysis of personal data that pertains to employees' bodily state and health. Cameras are directed at individuals with the aim of evaluating their physiological state. This is in an environment where staff are all identified. The data generated by thermal cameras is personal data as defined by Article 4(1) GDPR and s.3(2) DPA. Where infrared data is processed as health data, it is special category personal data as defined by Article 9 GDPR, which requires special safeguards. Please could you explain the safeguards you have put in place?

The thermal data may be used to make decisions, which may be automated or based on this profiling and significantly affect the employee. Such automated decisions are ordinarily prohibited by s.14 DPA and Article 22 GDPR, and at the very least require special safeguards. Please can you provide a full decision tree of what the consequences may be if an individual is flagged as having an elevated temperature, and explain how and by whom those decisions may be made?

At a minimum, a data protection impact assessment (DPIA) would need to be completed for any lawful use of thermal surveillance, as required by Article 35 GDPR. This is because the data processing is likely to result in a high risk to the rights and freedoms of data subjects; the processing involves a systematic evaluation of personal data and may qualify as profiling; the data may result in decisions that significantly affect individuals; the surveillance involves large-scale processing of sensitive (special category) data pertaining to individuals' health; and the surveillance constitutes systematic monitoring of a publicly accessible area on a large scale. A DPIA should describe the processing in detail, including the purpose, and an assessment of the necessity, proportionality, why less intrusive means are insufficient, risks to individuals' rights and freedoms, and the measures taken to address the risks and ensure employees' legal rights are protected. Please could you inform me as to whether a DPIA has been completed, and if so, provide me with a copy?

Limited accuracy and utility

One important consideration as to the lawfulness of your use of of thermal surveillance cameras is the accuracy of the data generated and collected. Data collected must be accurate

(Article 5(1)(d) GDPR) but the accuracy of thermal imaging, particularly in the present application, is unclear.

This technology is being applied as a novel surveillance method that is unproven in a public health context. During a seasonal flu epidemic, a New Zealand study found thermal scanners were "not much better than chance" at identifying infected individuals.[2] During the SARS epidemic, 763,082 people were screened by thermal scanners in Toronto and Vancouver, but failed to identify a single case.[3]

Since the onset of the present pandemic, some commercial vendors have professed that their thermal cameras screen for signs of fever – a known symptom of the novel coronavirus. Unscrupulous surveillance and security companies are selling thermal imaging devices in the UK with marketing slogans such as "fever detection". As a result, the independent camera review site IPVM describes a "booming multi-million coronavirus fever camera market."[4] **However, thermal cameras cannot detect fevers.**

Thermal cameras detect radiated infrared energy from the surface of a solid object (in this case, skin surface of either the face or the entire body) and the software converts this to an estimated temperature reading. The temperature reading of each pixel is associated with a colour to provide a visual representation of this estimation. The accuracy of the reading depends on many environmental and detector factors, including whether the camera and subject are still or not, whether the face or entire body is scanned, positioning, the pixel resolution of the camera, spatial resolution, emissivity, temperature drift, and detector and system noise. One major thermography vendor, MoviTHERM, advises that thermal images of crowds do not provide accurate readings of elevated body temperatures.[5] The camera review site IPVM described it as a "core issue" that there are "no independent tests of thermal camera performance/accuracy and no independent standards to measure against", and in its own independent reviews found that companies' claims to accuracy were "overinflated".[6] MoviTHERM considers that thermal cameras have a +/- 2 degrees Celsius error margin.[7] Whilst this may be negligible in many commercial applications of the technology, it seriously undermines efficacy when applied to attempt to detect the small temperature discrepancies that indicate an elevated core body temperature or fever. Thermal imaging cameras detect infrared energy from skin surface, which is not an accurate indicator of core body temperature.[8] Core body temperature must be measured (e.g. with an oral thermometer) to detect a fever. Nonetheless, for transparency, **I would appreciate if you would explain by reply**

2 Priest PC, Duncan AR, Jennings LC, Baker MG (2011) Thermal Image Scanning for Influenza Border Screening: Results of an Airport Screening Study. PLoS ONE 6(1): e14490. https://doi.org/10.1371/journal.pone.0014490

3 St John, R. K., King, A., de Jong, D., Bodie-Collins, M., Squires, S. G., & Tam, T. W. (2005). Border screening for SARS. Emerging infectious diseases, 11(1), 6–10. https://doi.org/10.3201/eid1101.040835

4 The Booming Multi-Billion Coronavirus Fever Camera Market - John Honovich and Charles Rollet, IPVM, 21 April 2020: https://ipvm.com/reports/corona-cam-market

5 Elevated Body Temperature Screening – MoviTHERM, YouTube, 16 April 2020: https://www.youtube.com/watch?v=kBrBlohq9gg

6 Detecting coronavirus fevers with thermal cameras – IPVM, 15 March 2020: https://ipvm.com/reports/thermal-wuhan

7 Elevated Body Temperature Screening – MoviTHERM, YouTube, 16 April 2020: https://www.youtube.com/watch?v=kBrBlohq9gg

the software you use to scan employees, its claimed accuracy in detecting core body temperature, the threshold at which you set your thermal imaging cameras to flag an individual, and how this threshold was arrived at.

A number of factors, other than the potential of infection with Covid-19, affect skin temperature. Skin temperature fluctuates with the diurnal cycle and is affected by acclimatisation, stress, anxiety, alcohol and various other conditions. Skin temperature also fluctuates with the menstrual cycle and can be affected by menopause, raising the possibility of particular impact of unskilled thermal screening on female employees. A raised skin temperature can also result simply from physical exertion, or a fever caused by any number of infections unrelated to Covid-19.

Even accurate temperature screening has limited efficacy in screening for Covid-19. This is due to the incubation period and proportion of asymptomatic infections. A substantial proportion of Covid-19 infections are thought to be asymptomatic.[9] The World Health Organisation (WHO) recently advised that "temperature screening alone may not be very effective" as it may miss those "incubating the disease(...), or it may yield false positive [sic]".[10] The European Centre for Disease Prevention and Control (ECDC) has also cautioned against thermal screening, warning that the measure is not supported by scientific evidence.[11] On the contrary, the use of thermal cameras may give people a false sense of security which could lead to more risky behaviours. In a pandemic, misplaced confidence deriving from surveillance marketing rather than scientific evidence endangers public health.

In light of the evidence, it is questionable whether there is a legitimate purpose for your use of thermal surveillance cameras and whether it could be considered necessary or proportionate. Can you detail your necessity and proportionality assessment, and explain the evidence basis for your use of thermal surveillance?

Given the extraordinary circumstances, employers should consider a diversity of measures that make even a small impact on protecting public health. However, measures that engage fundamental rights must be proportionate and moreover, measures must not be counter-productive, diminish trust, create a false sense of security or have an adverse impact on individuals. However, all of these risks apply to thermal imaging cameras.

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8 Ng EY. Is thermal scanner losing its bite in mass screening of fever due to SARS?. Med Phys. 2005;32(1):93–97. doi:10.1118/1.1819532

9 Quilty Billy J, Clifford Sam, CMMID nCoV working group2, Flasche Stefan, Eggo Rosalind M. Effectiveness of airport screening at detecting travellers infected with novel coronavirus (2019-nCoV). Euro Surveill. 2020;25(5):pii=2000080. https://doi.org/10.2807/1560-7917.ES.2020.25.5.2000080

10 Key considerations for repatriation and quarantine of travellers in relation to the outbreak of novel coronavirus 2019-nCoV – WHO, 11 February 2020: https://www.who.int/news-room/articles-detail/key-considerations-for-repatriation-and-quarantine-of-travellers-in-relation-to-the-outbreak-of-novel-coronavirus-2019-ncov

11 Coronavirus screening at airports: the problem with thermal detection – Abi Millar, Airport Technology, 14 April 2020: https://www.airport-technology.com/features/coronavirus-screening-at-airports/

Serious rights impact

There are serious consequential effects of thermal surveillance cameras on fundamental rights beyond privacy that significantly impact employment, freedom of movement and other rights. This is particularly the case if employees do not have an opportunity to opt in or opt out of thermal screening without prejudice. The potential impact of your use of this technology on individuals' rights, freedoms and economic security, as well as the purported public health benefits, must be assessed and shown not to be harmful before its use is pursued.

It is important that you are clear as to whether thermal screening is mandatory or based on consent. To that end, I refer to the Surveillance Camera Commissioner's advice on 21st April 2020: "it might be proportionate to use [thermal imaging] technology in the unique times we are in (...) where individuals have given consent" but "mass use without individuals' knowledge seems disproportionate and would require much stronger justification."[12] **If your use of thermal imaging is based on consent, please can you demonstrate that consent is fully informed (and explain how), explicit and freely given, and that there are no adverse consequences for those who decline? If thermal imaging is not based on consent, can you explain the legal basis upon which you are acting?**

I sincerely hope you will reconsider your use of thermal surveillance to respect employees' rights and data protection, and to protect public health.

I look forward to your response.

Yours sincerely,

Silkie Carlo

Director of Big Brother Watch

12 Surveillance and COVID-19: Lessons to be learnt – Tony Porter, Surveillance Camera Commissioner, 21 April 2020: https://videosurveillance.blog.gov.uk/2020/04/21/surveillance-and-convid-19-lessons-to-be-learnt/