

## Ministry of Health, Welfare and Sport

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Date 20 Oktober 2017  
Subject Shortcoming in the Tobacco Product Directive (TPD)

Dear Mr. Andriukaitis,

**Our reference**

167856

With this letter I would like to draw your attention to a shortcoming in the Tobacco Product Directive (TPD). It enhances the already negative effects of cigarettes for smokers. I appreciate the steps that are taken with the directive to further reduce the harmful effects of smoking. It supports our national programs to avoid young people to start smoking and stimulates smokers to stop. It also helps the international collaboration regarding tobacco control. However, there is an omission in the directive concerning the measurement of tar, nicotine and carbon monoxide (TNCO) values, that increases the harmful effects of cigarettes. This was recognized in the negotiations leading to the revised directive in 2014, but in the end it was decided to keep the existing method. I nevertheless asked our National Institute for Public Health to further investigate the different methods regarding measurements of TNCO concentrations. The preliminary results (appendix A) cause me to express my concern in this letter.

*All correspondence addressed  
to the postal address quoting  
date and reference of this  
letter.*

In accordance with the TPD, TNCO contents in cigarettes are currently determined using the ISO method. Cigarette smoke is permitted to contain a maximum of 10 mg of tar, 1 mg of nicotine and 10 mg of carbon monoxide when smoked in accordance with the ISO method. However, measurements using the ISO method are not an accurate way of determining the amount of TNCO a smoker actually inhales. One of the reasons for this is that smoke measured by means of this method is mixed with air, sucked in through ventilation holes in the filter of the cigarette. As a result, TNCO concentrations in the inhaled smoke are diluted, resulting in lower values measured.

In line with this, several studies have shown that the main predictor of ISO measured TNCO yields, is filter ventilation. However, increasing the level of filter ventilation has no effect on the actual amounts of TNCO that a smoker inhales. Research has shown that, in order to inhale their desired amount of nicotine, smokers adapt their behavior depending on the degree of filter ventilation, for example by inhaling more deeply, for longer or more often. Smokers thus get equal amounts of nicotine from any type of cigarette, regardless of the ISO measured TNCO yields, by adapting their behavior.

Smokers will also cover some of the ventilation holes, consciously or unconsciously, with their fingers and mouth while smoking. Due to more intense smoking and closing of the ventilation holes, greater quantities of harmful substances end up in the smoke. So for each mg of inhaled nicotine, smokers are exposed to higher concentrations of, for example, tar, carbon monoxide, acetaldehyde and acrolein. These substances are harmful to health as they are toxic, carcinogenic and/or addictive.

The ISO method that is currently used underestimates the quantity of harmful substances to which smokers are exposed. There is a better method; the Canadian Intense (CI) method for example provides a more suitable alternative, closer to human smoking behavior and not susceptible to changes in filter ventilation, as the ventilation holes in the filter are taped and inhalation is deeper and more frequent. Smoking parameters of the CI method are also closer to the smoking topography of actual smokers. Measurements using the CI method will result in higher TNCO values in cigarettes than measurements using the ISO method. The CI / ISO ratios of the investigated cigarettes show that emission levels of TNCO measured by the CI method are 2 to 17 times higher than the level measured by the ISO method.

I know that the directive will be evaluated in the future. However, knowing that there is a shortcoming and that it enhances the harm done to smokers, I call upon you to take action now. I hope you will consider to improve the directive with respect to the measurements of TNCO contents of cigarettes. If you need more information from our National Institute for Public Health, or any other information, I am willing to provide this.

Yours sincerely,

Martin van Rijn  
State Secretary for Health, Welfare and Sport

**The Canadian Intense method for determining tar, nicotine, and carbon monoxide contents in cigarette smoke produces at least twice as high levels of toxic emissions as the ISO method**

*As commissioned by, and in collaboration with, the Office for Risk Assessment and Research of the Netherlands Food and Consumer Product Safety Authority, the Dutch National Institute for Public Health and the Environment (RIVM) and the department of Pharmacology and Toxicology of Maastricht University are conducting research into the emission of toxic substances in cigarette smoke.*

The data in the table below are taken from the manuscript titled “The influence of cigarette filter ventilation on aldehyde yields in cigarette mainstream smoke of 11 Dutch brands using four different machine testing protocols”, which will shortly be submitted for publication in a scientific journal. The table shows that the average tar, nicotine, and carbon monoxide (TNCO) contents as measured by the Canadian Intense (CI) method are at least twice as high as the contents measured by the ISO method, which is the current standard by-law. Smoking parameters of the more intense CI method are closer to human smoking behavior. The largest difference in TNCO contents between the two methods arises for cigarettes with the lowest TNCO yields in the ISO method. These cigarettes have more filter ventilation holes, which are taped over in the CI method – similar to smokers blocking these holes with their fingers and lips during smoking.

**Table 1: TNCO contents, as provided by manufacturers, measured by the ISO method vs. TNCO contents measured by the RIVM by means of the CI method. According to the tobacco product directive (2014/40/EU) cigarette smoke is permitted to contain a maximum of 10 mg/cigarette of tar, 1 mg/cigarette of nicotine, and 10 mg/cigarette of carbon monoxide.**

Brand	Tar (mg/cigarette)			Nicotine (mg/cigarette)			CO (mg/cigarette)		
	ISO	CI	CI/ISO ratio*	ISO	CI	CI/ISO ratio*	ISO	CI	CI/ISO ratio*
1.	1	17	17	0.1	1.2	12	2	27	14
2.	4	23	6	0.4	1.5	4	5	24	5
3.	8	20	3	0.6	1.7	3	9	26	3
4.	10	34	3	0.8	2.0	3	10	26	3
5.	10	34	3	0.8	2.0	3	10	28	3
6.	10	37	4	0.8	2.1	3	10	29	3
7.	10	29	3	0.9	1.8	2	10	25	2
8.	10	30	3	0.8	2.0	3	10	28	3
9.	10	29	3	0.8	1.9	2	10	25	3
10.	10	39	4	0.8	1.9	2	10	24	2
11.	10	34	3	0.8	1.7	2	10	29	3

\* The CI / ISO ratio shows how many times the emission level measured by the CI method is higher than the level measured by the ISO method.