



Exhaust emissions inspection and maintenance for motor vehicles: Evaluation of effectiveness and efficiency

Martin Koci, SFAO



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Agenda

1. Facts & Figures
2. Audit Subject, Methods,
Results & Recommendations
(selection)
3. SFAO Experiences &
Challenges



Facts & Figures

- In CH, 99% of motor vehicles are road vehicles (responsible for most of the emissions in the transport sector)
- In CH, all motor vehicles are subject to two types of periodic checks:
 - 1) compulsory emissions testing and maintenance (carried out by private garages); every 2 years after first registration -> 2-2-2-2-2...
and
 - 2) periodic official inspections (performed by cantonal vehicle licensing offices); time interval after first registration (years) -> 4-3-2-2-2...
- Official statistics show an improvement in air quality in recent years, due to stricter exhaust emissions standards, new technologies (catalyzer, on-board diagnostic systems OBD) etc.





Audit Subject/Questions & Methods

- Is the system of exhaust emission testing in Switzerland coherent and consistent to legal acts?
- Is the implementation of exhaust emission testing in garages and in the cantons homogeneously (efficient and effective)?
- Are state controls sufficient (surveillance/monitoring)?
- Cost-benefit-ratio of the actual system /Value for money? Is there room for improvement?

Methods used

- Interviews
- Desk research
- Surveys (garages, inspection offices, car driver)
- Statistical and reference analysis

Audit Results I

- The annual costs of exhaust emissions inspection and maintenance for all road vehicles examined are approximately CHF 165m (estimation).

	Benzinfahrzeuge				Dieselfahrzeuge							
	als		als Teil eines		weniger als 3.5t				ab 3.5t			
	Alleinauftrag		Service		als		als Teil eines		als		als Teil eines	
	On-Board-Diagnose	ohne	mit	On-Board-Diagnose	ohne	mit	On-Board-Diagnose	ohne	mit	On-Board-Diagnose	ohne	mit
Personenwagen	26.9	14.1	28.7	25.8	3.4	4.3	6.3	7.8				
Transportfahrzeuge	1.4	0.6	2.3	1.1	3.5	2.4	6.5	4.3	0.8	0.4	1.8	0.8
Total für Wartung + Messung	28.3	14.7	31.0	26.9	6.9	6.6	12.7	12.2	0.8	0.4	1.8	0.8
Wegkosten bei Alleinaufträgen	2.2	1.9			0.3	0.4			0.5	0.3		
Betriebsausfall Fhz ab 3.5t									5.5	3.5	4.3	2.7
Total inkl. Wegkosten + Betriebsausfall	30.5	16.6	31.0	26.9	7.2	7.0	12.7	12.2	6.8	4.2	6.1	3.5
Total nach Kategorie	105.0				39.1				20.7			
TOTAL Kosten	164.8											



Audit Results II

- Faults / Error rates in exhaust emissions inspections are about 5-8%* (D and CH), results independent of different methods of collecting data and interests of data owners. Compulsory inspection was therefore effectively redundant in 95% of cases – and produced no environmental benefit either

-> low cost-benefit and cost-effectiveness (today)

- * In fact, error rates are deviating as a function of
 - Fuel (gasoline, diesel)
 - Employment of technologies (catalyzer, OBD, particulate filter)

Audit Results III

- Many garages do not perform the compulsory inspection of vehicle exhaust systems thoroughly, and this is reflected in the generally low prices charged and short average times taken to complete the inspection and maintenance work (Survey results). The full mandatory procedures for inspecting and maintaining all the parts related to the vehicle's exhaust system are often not carried out.

-> Cost-efficiency (garages) – low benefit (car owner)

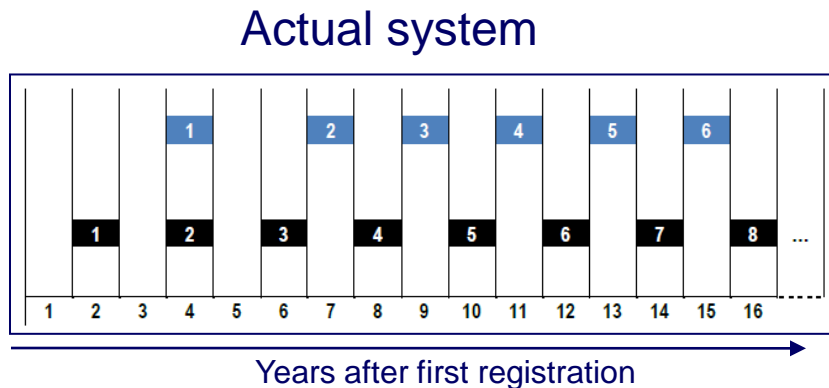
- Although all cantons use a common quality assurance system for official vehicle emissions checks, the SFAO has identified significant differences regarding the frequency and thoroughness of emissions testing.

-> Cost-efficiency (inspection offices/authorities)?

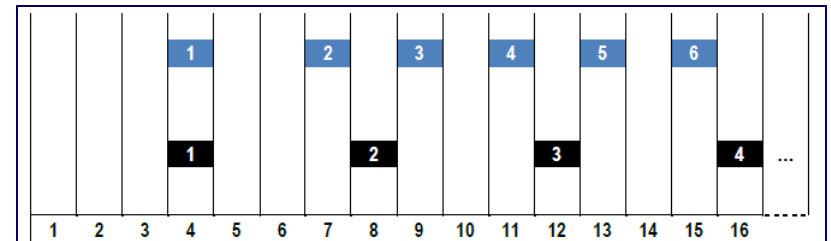
Recommendations (selection) I

Recommendation:

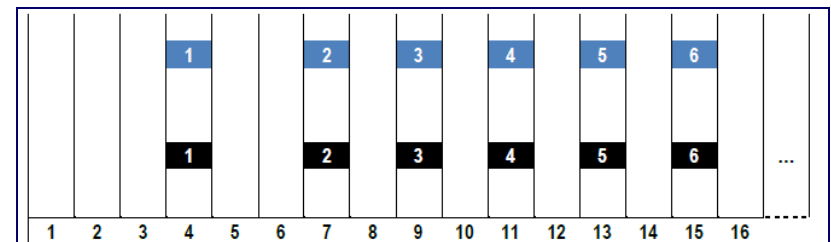
Given that faults are so rare in the exhaust after-treatment systems fitted in *petrol-driven passenger cars with on-board diagnostics*, the current inspection interval stipulated for this vehicle group can be extended. The Swiss Federal Audit Office proposes two possible variants here:



Variant 1



Variant 2



- Periodic official inspection
- Compulsory emissions testing

-> Increase of economy, efficiency + cost-benefit



Recommendations (selection) II

Recommendation:

With new cars, for example, the first compulsory emissions test could be performed a year later than at present without the threat of any significant increase in airborne pollutants. The (monetary) savings potential of the recommendations 1 and 2 is between 15 and 22 million francs, depending upon the selected variant.

-> increase of cost-benefit + efficiency

Recommendation:

Since many garages fail to inspect exhaust systems thoroughly, the legal position of the authorities should be strengthened so that they demand a *repeat inspection with a different auto service company* if faults are found in the vehicle's exhaust system.

-> increase of effectiveness



3. SFAO Experiences & Challenges

SFAO Experiences & Challenges in brief

<p>Experiences/ Challenges in general</p>	<ul style="list-style-type: none"> • No reliable or actual data available • Technical subject – strong cooperation with involved authorities and experts • Difficult to collect evidence
<p>Methodology/Data</p>	<ul style="list-style-type: none"> • Evaluation of (system) 3E is complex: Costs: estimates/extrapolation, benefits: (non-)monetary (air quality, personal savings) • Several surveys needed (data reliability?), (Hidden) indirect data collection (error rate in CH) • Consideration/utilization of comparable data (D)
<p>Findings/ Recommendations</p>	<ul style="list-style-type: none"> • Limited access of the authority involved to control • Limited access to data/information of authorities involved in implementation (principle of subsidiarity in regions)
<p>Impact</p>	<ul style="list-style-type: none"> • Results as trigger for discussions • Audit was appreciated in general

Thank You!



Questions?