

Schriftliche Prüfungen  
**Semesterkurs Analytik V**  
**Analytical Strategy**  
**Winter 2011/2012**  
**MSc CHAB**

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Vorname: \_\_\_\_\_ Name: \_\_\_\_\_

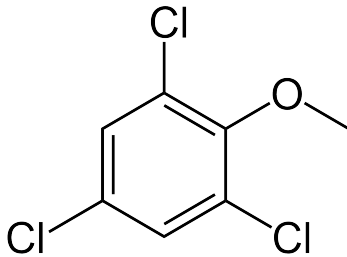
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- Es sind alle Aufgaben zu lösen. Jede Aufgabe wird separat benotet.  
*Every question needs to be answered, each one will be graded separately*
- Zeit: 60 Min. Teilen Sie sich Ihre Zeit gut ein.  
*Time: 60 min, organize your time carefully.*
- Sie können auf Englisch oder Deutsch antworten  
*Answers are accepted in German or English.*
- Es sind alle Hilfsmittel mit Ausnahme von Computern und Telekommunikation erlaubt.  
*It is allowed to use all resources except for computers and communication devices.*
- Unleserliche Texte, unklare Formulierungen oder unsaubere Skizzen können nicht bewertet werden. Bitte bemühen Sie sich um eine saubere Darstellung.  
*Unreadable text, unclear formulations or graphs are not graded. Please try to use clear illustrations and descriptions*
- Beginnen Sie jede Aufgabe auf einem neuen Blatt und schreiben Sie jedes abzugebende Blatt einzeln mit Ihrem Namen und Vornamen an.  
*Start every question on a new page. Label every page with name and surname.*
- Dieses Deckblatt ist ausgefüllt abzugeben. Die Aufgabenstellung ist ebenfalls einzureichen.  
*Please fill in the first page. Hand in all pages including cover page and questions.*
- Wir bitten Sie um Fairness und wünschen Ihnen viel Erfolg!  
*We ask you for fairness and wish you good luck!*

**Prüfung Winter 2012 / Analytische Strategie**

Cork taint in wines stems from 2,4,6-trichloroanisole (TCA; structure see below), a compound which has an extremely low olfactory threshold. This means that already ppt amounts of TCA lead to an “off taste” of wines. Because of these low concentrations, the culprit for cork taint was not identified until the early 1980s, and until then, wine growers, bottling companies, and cork manufacturers would blame each other if wines ended up with cork taint.

Your assignment is to develop an analytical strategy to detect and quantify TCA in wine samples.



**Figure:** chemical formula of 2,4,6-trichloroanisole

Answer the following questions:

- A) How would you perform the sampling, extraction, and sample enrichment/upconcentration?
- B) Propose a method to analyze TCA in such an enriched sample.
- C) Propose 3 possible methods of detection for TCA. Consider also that one of the best ways to identify TCA is by its smell: what could one do to take advantage of its low olfactory threshold?
- D) Propose a strategy for quantification that includes ways to assess the recovery, the precision, and the reproducibility of your method.
- E) Speculate about the origin of TCA in wines (from the grape juice, from the treatment of the corks, from the bottling process, ...) and give a detailed justification for your suggestion. Propose a course of action to regulate, based on your analytical results, the process responsible for TCA in wine, to avoid cork taint.