3. Use of organic solvents

(1) Display of information

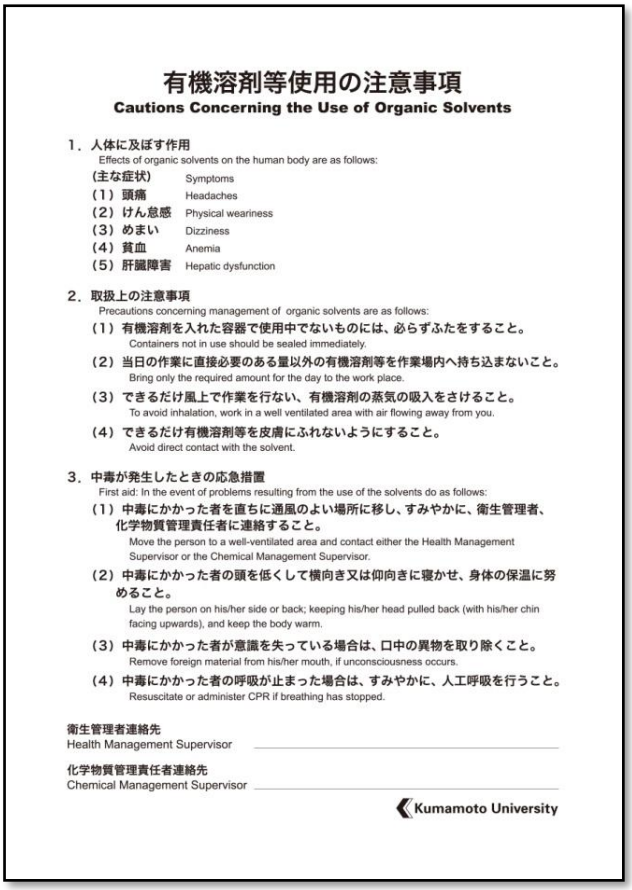
“Organic solvents” is a generic term of organic compounds with properties to melt other substances. These chemical substances are often used in chemistry experiments. Basically, many organic solvents are highly volatile and toxic. Organic solvents that are known to be highly toxic in particular are regulated by the Order on Prevention of Organic Solvent Poisoning. Organic solvents are classified based on toxicity (Class I to Class III). The types and classifications of organic solvents are indicated on a poster in the area where organic solvents are used. Check whether chemical substances that you are going to use are regulated.

It should be noted that organic solvents are chemical substances whose chronic toxicity is likely to be high even if they are not regulated by the Order on Prevention of Organic Solvent Poisoning. Make sure to use organic solvents in a well-ventilated area or in a fume hood. Vapors generated by organic solvents are heavier than air and are likely to accumulate on the floor. Arrangements should be made to ventilate the bottom part of a laboratory if a fume hood is unavailable.

At the University, the poster below is used to help users determine whether chemical substances are regulated by the Order on Prevention of Organic Solvent Poisoning. Put a circle “○” on organic solvents to be used, and make sure to display the poster.

Fig. 5-2 Classification of organic solvents

In areas where organic solvents are handled, the document below must be displayed. Make sure to read the precautions before using organic solvents.



有機溶剤等使用の注意事項
Cautions Concerning the Use of Organic Solvents

1．人体に及ぼす作用
Effects of organic solvents on the human body are as follows:
（主な症状） Symptoms
（1）頭痛 Headaches
（2）けん怠感 Physical weariness
（3）めまい Dizziness
（4）貧血 Anemia
（5）肝臓障害 Hepatic dysfunction

2．取扱上の注意事項
Precautions concerning management of organic solvents are as follows:
（1）有機溶剤を入れた容器で使用中でないものには、必らずふたをすること。
Containers not in use should be sealed immediately.
（2）当日の作業に直接必要のある量以外の有機溶剤等を作業場内へ持ち込まないこと。
Bring only the required amount for the day to the work place.
（3）できるだけ風上で作業を行ない、有機溶剤の蒸気の吸入をさけること。
To avoid inhalation, work in a well ventilated area with air flowing away from you.
（4）できるだけ有機溶剤等を皮膚にふれないようにすること。
Avoid direct contact with the solvent.

3．中毒が発生したときの応急措置
First aid: In the event of problems resulting from the use of the solvents do as follows:
（1）中毒にかかった者を直ちに通風のよい場所に移し、すみやかに、衛生管理者、化学物質管理責任者に連絡すること。
Move the person to a well-ventilated area and contact either the Health Management Supervisor or the Chemical Management Supervisor.
（2）中毒にかかった者の頭を低くして横向き又は仰向きに寝かせ、身体の保温に努めること。
Lay the person on his/her side or back; keeping his/her head pulled back (with his/her chin facing upwards), and keep the body warm.
（3）中毒にかかった者が意識を失っている場合は、口中の異物を取り除くこと。
Remove foreign material from his/her mouth, if unconsciousness occurs.
（4）中毒にかかった者の呼吸が止まった場合は、すみやかに、人工呼吸を行うこと。
Resuscitate or administer CPR if breathing has stopped.

衛生管理者連絡先
Health Management Supervisor _____

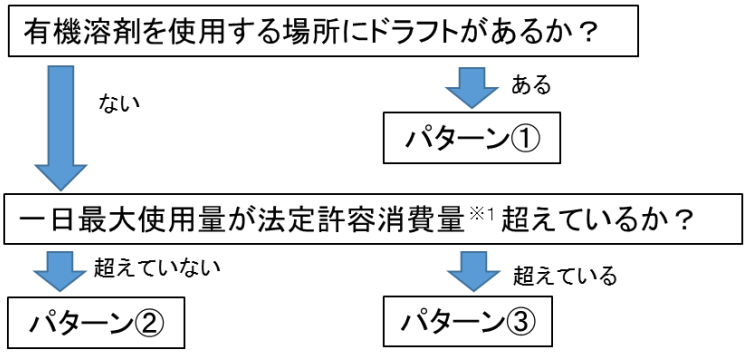
化学物質管理責任者連絡先
Chemical Management Supervisor _____

Kumamoto University

Fig. 5-3 Precautions When Using Organic Solvents

(2) Restriction on the usage area

Organic solvents that are regulated by the Order on Prevention of Organic Solvent Poisoning must be used in areas where local exhaust ventilation, etc. (e.g., a fume hood) is in place in principle due to their toxicity. To use organic solvents in areas without a fume hood, etc. for unavoidable reasons, it is necessary to obtain accreditation for partial exemption. Check the flow below.



パターン①: 使用できます。
パターン②: 使用できますが、労働基準監督署の一部適用除外認定を受ける必要があります。また、使用記録簿が必要です（記録方法は毒劇物と同じです）。
パターン③: 使用できません。使用場所変更又はドラフト等局所排気装置の設置が必要です。

※1 法定許容消費量
第1種有機溶剤：法定許容消費量（g）=(1/15)×部屋の容積m^3
第2種有機溶剤：法定許容消費量（g）= (2/5)×部屋の容積m^3
部屋の容積は150m^3を超える場合は150m^3とする。
第1種有機溶剤は最大値10g、第2種有機溶剤は最大値60g