**Connecticut Science Supervisors Association**
**Position Paper**

**Science Teachers For the "Wonder Years"**

(The Critical Role of Middle School Science Teachers)

Introduction

**Preparing scientifically literate citizens for responsible and productive living in the 21st Century is surely a crucial goal for a society so shaped by and so dependent on scientific and technologic advances.  Achieving this goal will depend in large measure on the quality of the science education we provide to American youth.  While science education needs to be strengthened and improved at all levels, the need is nowhere greater than at the middle school:**

* **There is a pivotal significance to the middle school years because they coincide with a unique and highly impressionable phase in human growth and development.**
* **The middle school years are a time when a great many children become aware of their special interests in and talents for the pursuit of science.**
* **Science and mathematics are such cumulative subjects that children who opt out of science at the middle school level may find it difficult if not impossible to opt back in later.**
* **The middle school science teacher is usually the first teacher that children encounter who possesses both special interest and formal preparation in the natural sciences.**
* **For too many children the middle school science teacher may be the last science teacher that these future citizens will encounter.**

Teacher Qualifications

**The role of the middle school science teacher is exceedingly complex and demanding in large part because of the rapid and often unpredictable advances in science and the equally rapid and often unpredictable changes in adolescents.**

 **The effective middle school science teacher:**

* **possesses a solid preparation in the natural sciences in order to provide a balanced curriculum in life, physical and earth/space science and to model science as an active way of knowing**
* **can effectively guide students as they engage in inquiry-oriented laboratory and field investigations**
* **supervises and ensures that students use appropriate safety procedures and equipment in classroom, laboratory, and field settings**
* **can utilize a variety of instructional strategies that accommodate different student backgrounds, cognitive abilities, and learning styles (e.g., cooperative learning, learning cycles, constructivism)**
* **recognizes the great importance of gender equity, especially emphasizing the role of females in science and mathematics**
* **can create science assessment instruments, including performance-based models, to gather diagnostic information on student achievement and then can use such data to guide instructional decisions and practices**
* **is capable of utilizing modern instructional technology in a variety of ways in the science classroom (e.g., calculator-based laboratories, computer-based laboratories, laser disks)**
* **provides experiences in science that nurture habits of mind such as curiosity, logical reasoning, and drawing conclusions based on evidence**
* **recognizes the importance of communicating and cooperating with parents**
* **utilizes community resources (i.e., individuals and agencies that can provide guest speakers, information on careers in science, training, and supplemental and enrichment  materials)**
* **demonstrates a  genuine commitment to work with students and colleagues (as a member of a community of learners) and is able to implement contemporary approaches to middle school education such as integrated and interdisciplinary teaching.**

 Professional Characteristics and Credentials

**Becoming an effective science teacher means being committed to lifelong learning. At the outset, however, the middle school science teacher should possess the following basic preparation:**

* **a solid background in science, including at least a major in one area of science and course work in each of the other areas - biology, chemistry, physics, earth science, as well as mathematics.**
* **thorough preparation in adolescent psychology and development**
* **an operational knowledge of inquiry-based instruction using basic laboratory techniques, equipment, and instruments**
* **successful completion of one full semester of student teaching at the middle school level or comparable middle school experience.**

Final Thoughts

**The most successful and experienced teachers should be teaching at the middle school level. This would bring students in contact with the best role models at a time when they are most impressionable. By recognizing the pivotal importance of the middle school years, and by seeking middle school science teachers possessing the preparation and attributes described in this position paper, school  systems can effectively respond to the renewed interest and urgency in improving science education for citizens of the twenty-first century.**

***This position paper was prepared under the aegis of the Connecticut Science Supervisors Association and incorporates recommendations of the American Association for the Advancement of Science, the National Research Council and the National Science Teachers Association.***